Disruptive Cartographies: Manoeuvres, Risk and Navigation

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Abbreviations

Actor-Network Theory | ANT

Application Programming Interface | API

Association of Chief Police Officers | ACPO

Blackberry Messenger | BBM

British National Party | BNP

Counter-Cartographies Collective | 3Cs

Department for Business, Innovation & Skills | BIS

English Defence League | EDL

European Court of Human Rights | ECtHR

Evidence Gathering Teams | EGTs

Freedom of Information | FOI

Forward Intelligence Teams | FITs

Geographical Information Science | GIS

Graphical User Interface | GUI

Her Majesty's Chief Inspector of Constabulary | HMIC

Higher Education | HE

Human-Computer Interaction | HCI

International Mobile Subscriber Identity | IMSI

Institute for Applied Autonomy | IAA

London Metropolitan Police | Met

Movimiento 15-M | 15M

National Campaign Against Fees and Cuts | NCAFC

National Police Improvement Agency | NPIA

National Public Order Intelligence Unit | NPOIU

National Union of Students | NUS

Network for Police Monitoring | Netpol

Nintendo Entertainment System | NES

Occupy Democracy | OD

OpenStreetMap | OSM

Operating System | OS

Student Unions | SUs

Territorial Support Group | TSG

The People's Assembly Against Austerity | PA

Thin-film transistor | TFT

Trades Union Congress | TUC

University College London | UCL

Victoria & Albert Museum | V&A

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Declaration

This thesis is the authors' own work. No portion of the work referred to in this thesis has been submitted in support of an application for another degree or qualification at this or any other university or institute of learning.

Abstract

There have been many opportunities to study protest events over the last six years. From Occupy to the Arab Spring and *15M*. After the financial crash, citizens of the world crafted their own original responses. What they shared – from New York to Cairo and Madrid – was a desire to take to the streets in political protest. In the UK the enemy was 'austerity'. One of the first policies of this new era proposed a rise in Higher Education tuition fees. Students took to the streets in dissent. A host of political, institutional, technological and social transformations occurred. More specifically, it saw the birth of a digital platform designed to help protesters navigate during protests. It was called Sukey. This thesis interrogates the impact and legacy of the Sukey platform; over, and beyond, these tumultuous years. It does so through the lens of 'disruptive cartography', arguing that the platform was deployed to disrupt the smooth running of both so-called 'A-to-B' demonstrations, and police containment tactics colloquially referred to as 'kettles'. I contend that the platform did so by providing up-to-date navigational information regarding active phenomena, such as police movements. In this thesis I undertake an aesthetic, interactive and mobile analysis to investigate the navigational dimensions of the project. I do so through an automobile metaphor in which I look 'under the bonnet', 'through the windscreen', and 'on(to) the road'. In its absence, I argue that protesters have lacked the requisite navigational knowledges to perform unpredictable manoeuvres, during protest events. As a result, they have returned to using institutional forms that limit the navigational possibilities brought-into-being by the Sukey platform. I conclude by speculating on three possible 'failures' of the platform regarding its ability to faithfully 'capture' live events, provide a navigational 'correspondence' between cartographic 'signposts', and to protect participants from data-driven policing.

Chapter 1 | Introduction

Fig 1.1 | Westminster Bridge, December 9th 2010. Source: Jon Cartwright (2010)

'Disruption comes in many wondrous forms'

(Scott 2012, xviii)

2010 was unequivocally a turning point in the UK: politically, socially and technologically. For the first time in 13 years, the UK was waking up to a Conservative government, albeit in the form of a historic coalition with the Liberal Democrats. New Labour – that curious beast – was in many ways in decline. With the 2007/08 financial crash still to be resolved new political, social and technological forms, dynamics and assemblages were emerging in response to global turmoil. The days, weeks, months and years since have seen the explosion, development, critique, and consolidation of a range of political models, protest tactics and novel means of communication.

2015 marked an anniversary, then. For student activist groups such as the National Campaign Against Fees and Cuts (NCAFC) it was already their fifth birthday. In many ways they represent the ideology of the wider anti-austerity movement that has, for example, grown from being an outside protest group to a body with members on the National Union of Students' (NUS) National Executive Committee. The NUS is the primary union for students in the UK. Other groups, like UK Uncut, opposed to growing concerns such as corporate tax evasion were also born in 2010. The People's Assembly Against Austerity (PA) – 'a national forum for anti-austerity views' (People's Assembly Against Austerity 2013) – took until 2013 to arrive on the scene and in just two years of formation organized the largest anti-austerity demonstration since 2010. Needless to say, then, that this period has been characterized by the birth of new social movements and new political organizational forms. In doing so they have challenged the existing, perhaps even 'sclerotic' (Scott 2012, xvii) state and institutional mechanics of power in the UK.

Yet 2010 was not entirely without precedent. Many groups took to the streets in protest using tactics devised and deployed in varying actions over the previous 10 years. The Trades Union Congress (TUC) – the UK's main trade union federation – continued to organize demonstrations like it has done through its 147-year history. Others in opposition to the G8 and their various summits around the world organized protest events and anti-capitalist carnivals, whilst the environmental movement continued to organize flash demonstrations and occupations in art galleries and public spaces across the capital. This combination of old and new, enduring and embryonic movements is what has defined UK political protest since 2010, with a mix of 'majoritarian' (Gerbaudo 2012, 10) and 'minoritarian' (Deleuze and Guattari 1986) forces. Yet this was far from a rosy relationship. 2010 became a year of tension – not just between austerity ideologues and anti-austerity campaigners, the state and anti-capitalist protesters, but also between these old and new political formations as each battled to have their voices heard.

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Now, in 2016, with new electoral and parliamentary forms of politics taking hold, what can we say about one of the most intensive periods in British protest history? This thesis hones in on one particular dynamic that defined these years. During the winter of 2010 student protesters opposed to a tabled House of Commons bill to increase the cost of Higher Education (HE) – from £3,290 to £9,000 a year – took to the streets of London to voice their discontent. Their doing so led to a series of conflicts between protesters and the London Metropolitan Police (Met) in which the latter deployed a number of spatial tactics designed to restrict the movements of the former:

> As the debate and vote came to its fateful conclusion, things accelerated outside Parliament. At 11am students gathered at the protest start point in Malet Street outside UCL [University College London]. Another group started to gather outside Parliament as Clegg and his Lib Dem ministerial colleagues attended a meeting at Downing Street before heading to the House of Commons where Vince Cable, the Business Secretary, began the debate. At 1.30pm, a breakaway group of students headed towards Buckingham Palace, where workmen's [sic] barriers left in the road were used as weapons. An hour later, the order was given to kettle the protesters as flares and fireworks were thrown at the police. (Bloom 2012, 64)

This account of the day of the tuition fee vote mirrors many during this period; of police and protesters engaged in pitched battles. On the day itself, however, there was far more to come. As freelance journalist Dan Hancox recalls in *Kettled Youth*:

> Along with around a thousand (mostly) young protesters I was imprisoned there, on Westminster Bridge, outdoors in sub-zero temperatures for over two hours. Some were not released for four hours – by which time it was almost 1am. We were held in such a tight space by the Metropolitan Police that some protesters suffered respiratory problems, chest pains and the symptoms of severe crushing…With the walls on either side of Westminster Bridge barely waist-high, it is also tremendously lucky no one was

> squeezed out into the still, icy depths of the Thames below, where death would have been inevitable and horrific. This is the tenor of modern protest in Britain. (Hancox 2011a, 1)

One of the 'spatial manoeuvres' that became emblematic of the student protests was the practice of containment, colloquially known as 'kettling'. Far from a cheap metaphor, the kettle came to be the most accurate and visceral account of the tactics on display. As Dan Hancox wrote in two other publications at the time, it both 'radicalized Britain's youth' (Hancox 2011b) and 'fired up a generation' (Hancox 2011c). On the same day, and in response, protesters developed an 'anti-kettling' mapping application designed to enable them to be kept 'safe, mobile and informed' (Sukey 2012, n.p.) during demonstrations. It was called Sukey.

Disruption, Mobility, Safety, Legacy

This thesis is an attempt to interrogate the rise and fall of this anti-kettling platform through the lens of 'disruptive cartography'. That is, to tackle a mapping enterprise that, at its heart, attempted to generate a new way of doing politics *through* a mobile, navigational platform. The 'disruption' itself comprised of a number of techniques that radically re-interpreted the way that activists were able to arrest change in the world. 'Under communicative capitalism', as Jodi Dean (2016, 13) suggests, 'the democratic claim for the crowd reinforces and is reinforced by the hegemony of ideals of decentralization and self-organization'. Sukey offered the tantalizing possibility of furthering both these ideals.

For years the so-called 'A-to-B' demonstration has dominated public forms of protest in the UK. Such demonstrations typically consist of a start point ('A') and an end point ('B'), with participants marching along a pre-determined route; hence the phrase 'A-to-B' demonstration. Yet for many activists, its disruptive capacity has been radically reduced in recent times, with all manner of restrictions imposed, including attempts to charge event organizers for traffic management and road closures (Doward 2015, Evans 2015). For activists, this was labelled as but another 'death

knell for A-to-B marches' (Sketchley 2015, n.p.), with others in favour of 'A-to-B-to-C-to-D' actions (Asquith 2015, n.p.). Sukey, however, was designed for neither of these linear activities.

But this disruption did not aim to transform a pre-existing cartographic market. It was not launched to challenge Google Maps, to displace the UK Ordnance Survey or even to usurp OpenStreetMap (OSM). It was not a commercial start-up, a new state-funded enterprise nor even a mass open-knowledge project. Instead, Sukey was a more specific mapping platform designed to deal with a particular kind of scenario. The scene I've just set – of student activists kettled during protests in central London – was repeated on multiple occasions from 2010-2015. Yet it was never quite the same each time. The containment's unpredictable nature generated a continuously fluid protest environment.

Yet it was also an opportunity. December 10th 2010 was therefore a watershed. Not only did it culminate in the most visceral, physical and bodily moment of state power in the form of the Westminster Bridge kettle; but it also sowed the seeds of a novel, radical counter-force. That this counter-force was cartographic in nature is important. Maps have long been deployed for critical use – as counter-maps, tactical maps, autonomous maps and much more. So too had digital technologies been deployed for activist purposes. Moreover, maps have long been used in demonstrations: as navigational tools, in information leaflets, and as planning documents. But never before had they come together to provide a platform to aid *both* disruption *and* safety in the middle of a protest event. Never before had activists been able to utilize the power of a digital platform that could crowdsource the navigational knowledge of those protesting, and distribute it to the assembled crowd in minutes. That it did so with minimal resources and in little time is perhaps even more surprising.

But what, precisely, was this all for? If its efforts were not to commercialize geographic data, to provide overwhelmingly comprehensive cartographic data, or to universalize the data-collection process what exactly did it do? In short, it aided protester mobility. 2010-2015 was unmistakably

a period defined by mobile forms of protest best encapsulated in the idiom 'cat-and-mouse games'. Dating, allegedly, from 1675, the term variously refers to 'the act of toying or tormenting something before destroying it' or alternatively 'a contrived action involving constant pursuit, near captures, and repeated escapes' (Merriam-Webster 2016, n.p.). Cat-and-mouse games are similarly defined elsewhere as a 'series of cunning manoeuvres designed to thwart an opponent' (Oxford Dictionaries 2016, n.p.) and a 'relationship in which two parties closely monitor and challenge one another in a suspicious or self-protective manner, often because each party is attempting to gain an advantage over the other' (Wiktionary 2016, n.p.). Just like in the *Tom and Jerry* cartoon, protesters and police would spend their time engaged in constant battles throughout central London, with neither sure of who might have nominally 'won'.

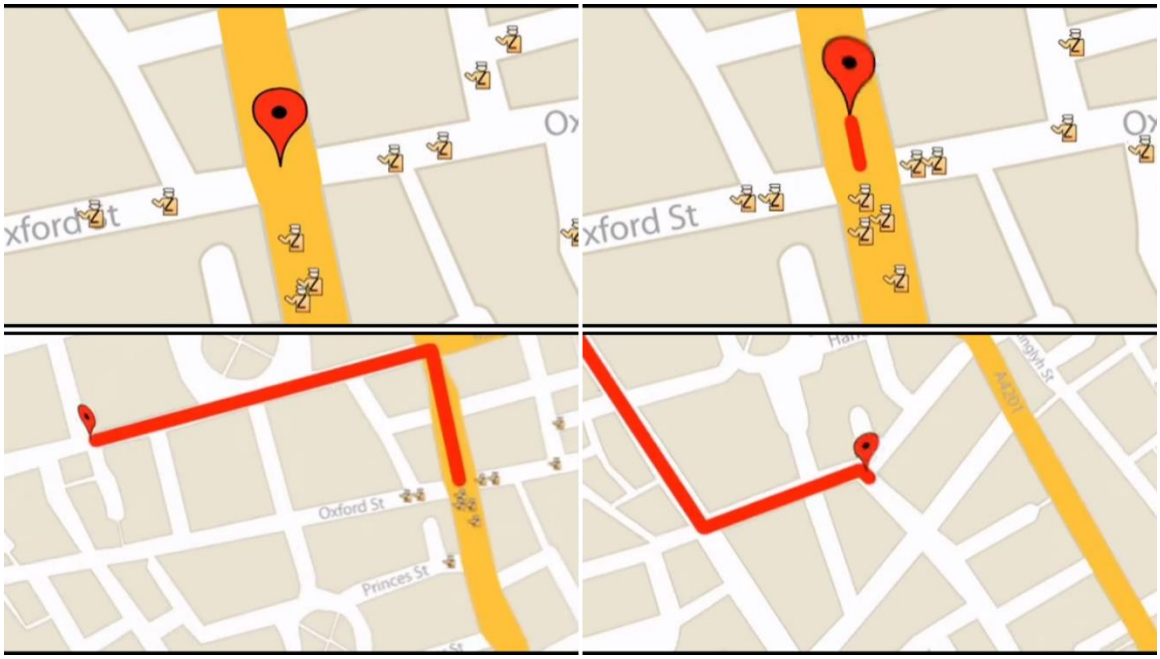


Fig 1.2 | Cat-and-mouse games. Source: *The Real Social Network* (Fales et al. 2012)

Each of these definitions bring an element of this mobile protest to the fore. As Dan Hancox recalls, once again:

> Eventually, just before 9pm, the kettle appeared to open. At last! Freedom. And a pint. And a toilet. And some goddamn dinner. For about 60 seconds we walked south from Parliament Square towards the bridge, thinking it was over. But this was the most crushing

> of false dawns: we were, it quickly became clear, merely being herded onto Westminster Bridge (the Germans call this kind of forced-march kettle a *wanderkessel*) – with lines of riot cops positioned halfway across the bridge, the others aggressively chased up the rear, closing us into an unhealthily confined space. Already exhausted, and increasingly angry and confused, this was when things got potentially life-threatening. (Hancox 2011a, 3)

This false dawn, as Hancox writes, is akin to 'the act of toying or tormenting something before destroying it'. Yet in other cases, these games were far more about 'constant pursuit' through the streets of London, as visualized perfectly in an unreleased film on the protests, *The Real Social Network* (Fales et al. 2012). As the frames show, the red pushpin narrowly avoids capture before making its escape down a side street and leaving the mass of police officers out of shot completely. Indeed, 'cunning manoeuvres' from both sides would repeatedly emphasize the importance of navigational knowledge. Some moments, such as the 'Heddon Street split' (see; chapter 9) demonstrated the pitfalls of being lost. Others, such as the second of two 'rhizomatic actions', illustrating the effect of such cunning. Throughout, the 'two parties' – of the activists and the police – would hold a deep suspicion of the other. That this was never quite resolved is the essence of the cat-and-mouse game.

But the platform wasn't just about disruption or mobility. It was built to ensure the *safety* of activists. In the weeks leading up to the tuition fee vote there had been numerous protests in London, Leeds, Sheffield, Edinburgh, Manchester and other cities around the UK (Coughlan 2010). In many of these local police forces had used containment manoeuvres to prevent widespread disorder. Increasingly, protesters were finding it necessary to have up-to-date information on the presence of police officers as well as the location of particular containments. It was then that the Sukey developers realized that some kind of navigational platform might be of use. If protesters became aware of containments forming at specific locations, whilst on the move themselves, they

would have the ability to change direction and avoid being kettled. In essence to avoid the exhaustion, anger and confusion experienced by those contained at previous demonstrations.

That Sukey came to a muted end only four years after it launched – even before the celebration of NCAFC's fifth birthday – is perhaps of the greatest surprise. The *Guardian* (Kingsley 2011), the *BBC* (Hudson and Price 2011), *WIRED* (Geere 2011) and *The Economist* (2011) all ran articles during its launch. As Patrick Kingsley wrote at the time '[a] group of young computer geeks is wielding a new weapon in the fight against controversial police tactics at demonstrations' (Kingsley 2011, n.p.), whilst Alex Hudson and Peter Price suggested that 'new technology' such as the Sukey platform was 'threatening to change protests forever' (Hudson and Price 2011, n.p.). The technology press, equally as enchanted by its emergence, was quick the push its 'open' values 'meaning that people around the world could adapt it for their own protests' (Bryant 2011, n.p.), whilst still 'opening a line for dialogue between protesters and the authorities' during such demonstrations (Doctorow 2011, n.p.). This was, as many had it at the time, to be a radical new way of communicating and doing politics.

But there was no final, rousing fanfare nor parting words from its developers. October 20th 2012 saw the roll-out of an entirely new version – Sukey 3.0 – that was designed to take a more wholesale approach to mapping protest events; entailing not just the communication of police containments but also the posting of funny banners and signs. Despite an extensive re-brand, it was to be Sukey's final hurrah. Those involved quietly left to pursue other projects, still in a similar activist vein, but still radically different from the live, mobile, digital mapping of protest events.

As such, this thesis is also an interrogation of the risks that were taken to develop the project and, ultimately, the so-called 'failures' that lead to its demise. Yet this is not to be a tale of sorrow; of how a revolutionary mapping project came to be so short-lived. Instead, it is an unpacking of the situated-ness of digital mapping ideology, and the struggles inherent to any technological project. These struggles are many. Some are cartographic in nature: not only how can one 'capture'

movements, less still map them; but also how one can map them fast, reliably, and accurately. These devilish issues would never quite disappear; always lingering around ready to cause a nuisance yet again. Others were epistemological in form concerning the flow of navigational knowledges: what or who could be trusted to communicate the correct information? Again, these issues would never quite vanish completely. Further still, some were bodily: how could one stay safe – both in physical and identity terms – and still protest? What would it mean to be compromised in such a situation? The risks, for developers and collaborators, were contingent and nonetheless real for it.

The years 2010-2015 have been dominated by an unprecedented proliferation of digital, mobile, technologies that have changed how we navigate and conceive of space and place. Along with this they have radically re-arranged our ideas on (and responses to) privacy, security, identity and action. These years have been dominated by an array of platforms, applications and services that have pushed these very concerns to the far-reaches of acceptability – as much technological innovation does. Few survive. Yet despite the general acknowledgement that the capitalist world is fierce and competition is strong, little attention is paid to those that fall by the wayside. Occasionally we mourn their loss in nostalgic fits (what happened to the Walkman? Betamax?) but we do not cast critical attention for much longer than this. It is in these sustained critical interrogations that we are able to move beyond an array of tricky formations – such as binary modes of thought, speculative hyperbolism and blind optimism – that threaten a clearer understanding of these digital technological endeavours.

The guiding interest throughout this thesis is how to 'reanimate' the recent cartographic past, whilst broadly furthering a non-representational approach to cartographic phenomena that takes into account the material, practiced engagement with digital mapping technologies. This has required the development of some rather novel techniques (see; chapter 6). It has required looking at pretty much everything other than the map itself, in some ways. Although this might

sound perverse to some, it has been entirely necessary in order to trace the connections and flows through and beyond cartographic representation. There is nothing particularly radical about looking beyond the map, however. Establishing its production and use has required researchers to do that for a considerable length of time, but with the rise of digital, mobile technology it has required this to be done so *continuously*, with attention cast to *multiple* locations often at the same time. 'Dynamism' is the defining term for this age.

But like many things it is only when this dynamism stops – intentionally, momentarily, abruptly, or accidently – that we discover its true working. In order to comprehend this dynamism, then, it is not only possible to approach it after the thing has run its course, but also entirely necessary to do so. Put otherwise: attending to the long-tail of technological development and demise is critical to an interrogation of its force and impact on wider social and political life. Whilst much of the empirical work undertaken for this thesis was done after the end of the Sukey project, this is not to say it is uninformed by the time in which it did operate. Sukey never formally and publically ended. There were no consumers to address or investors and shareholders to contact. There was no delisting, no outcry or even a last hurrah. Instead, it quietly slipped away. This thesis is an extension of work undertaken during an MSc. in Geographical Information Science (GIS) at the University of Manchester, carried out at the zenith of its operation, when *Guardian* reporters spent a day in their hackspace, the technology media proclaimed the start of a revolution and *BBC News* were keen to speculate on its rise. Since then, the thesis has – by necessity – taken a dramatically different turn from the direction one would have imagined at the time.

Some would call the ending of such a cartographic project a 'failure'. Indeed, that was my initial thought back in October 2012 when the platform was launched for the final time. Chapter 10 deals with this apparent 'failure', without diametrically opposing it to 'success'. Yet it is often valorized as a necessary state through which all – people, projects, things – must travel. This is immortalized in Samuel Beckett's quote 'ever tried. Ever failed. No matter. Try again. Fail better.' Yet, to the

student activists kettled on Westminster Bridge in cold, wet and dark conditions in December 2010, 'failing better' would ultimately result in yet more police containments, more cold, wet nights without reason; yet more 'preemptive' arrests; and yet more ineffective protests.

Thus, failure must be conceived as neither of these states. Neither as an antonym consisting of a 'lack' of success, nor as a desirable state indicative of an entrepreneurial ideology. Instead, failure must be considered more radically; with success and failure co-constitutive. In every success there is failure, and vice-versa. Thus, it is necessary to envelope any mention of 'failure' in this thesis with the requisite quotation marks. Allison Hui's use of the phrase 'intermittent accomplishments' (Hui 2012, 206) is more than apt to deal with this co-constitution. Digital technologies are not defined either by their initial success nor their final failure. Sukey not only 'threaten[ed] to change protests forever' it actually did so.

This is why Sukey has to be interrogated. Firstly, its impact lives on: in new technologies, new political engagements and new activist identities. In short, there is a cartographic legacy that needs to be addressed. Secondly, there was no 'failure' in the common meaning of the phrase as a 'lack' or an 'absence' of sorts. Failure is as productive as success itself, providing space for new ideas, things and opportunities. But that is not to say that it did not reach the limitations of cartographic thought and action. Indeed, it did just that. But still, it was no failure. This thesis is an attempt to answer how and why it can be considered in this way.

Thesis Outline and Research Questions

As a general aim, the PhD thesis interrogates the impact of digital mapping technologies on protest events in the UK. The main case study – a now-defunct 'anti-kettling' digital mapping platform called Sukey – operated between 2010-12 in order to keep protesters 'safe, mobile and informed' (Sukey 2012, n.p.) during student and anti-austerity demonstrations in London. It is still the only 'live', collaborative, mobile mapping platform developed for, and deployed within, an

urban protest environment. This cartographic uniqueness was the source of its demise, yet despite much media coverage at the time, its impact – on protest, on mapping, on forms of urban play, on concepts of risk and on the digital – is at yet significantly under-theorized.

In order to interrogate the impact of the Sukey platform, I employ an automobile metaphor as a methodological framework. Conceiving of a digital mapping assemblage as a multitude of interlocking, mutually-dependent parts goes some way to aiding the description, analysis and evaluation of its form, function and force. As I have already noted interrogating the map involves, for the most part, exploring everything *but* the map. Through the deployment of the automobile metaphor, I argue that it becomes possible to comprehend all various parts in the mapping assemblage without recourse to binaries between production and consumption, mappers and the mapped, object and practice. Instead, the metaphor brings all these into play – maybe not all at once, but certainly on occasion. As such the empirical chapters are split according to their function: as 'engine', 'windscreen' and 'wheels' of the metaphorical automobile.

The reason for using a metaphor as a structural device in the thesis is manifold. Firstly, the integrated and 'holistic' form of the automobile helps to explain the necessarily integrative form of the mapping assemblage. In this, the map is not disconnected from the device upon which it is viewed, and neither is its production shorn from its use. Mapping practice, thus, is equally both the capturing of geographic data and the collaborative deployment of such for navigational purposes. Secondly, the 'mobility' of the car emphasizes the 'manoeuvrability' of activists and police officers during protest events. Despite being a slightly unwieldy term, 'manoeuvre' is the most appropriate to describe the collective, practiced, honed and executed movements performed both by activists and police officers during demonstrations. Thirdly, the double definition of the car windscreen as an 'interface' – both selective shield and aesthetic medium – allows one to tie the visualization and subsequent calculation of geographic data to the practice

of navigating and, ultimately, moving. The interface enables the execution of decisions on how and where to move. This is a critical part of the thesis.

Accordingly, the thesis asks three specific research questions:

- What aesthetic and interactive elements underpin the digital mapping enterprise? How do they power it?
- How are navigational knowledges generated through calculative, cartographic practices?
- How does/did the platform facilitate 'disruptive activities' during protest events?

However, to consider these questions requires an unpacking of their constituent parts. Akin to taking apart a motor vehicle, this genealogical, conceptual and tactical approach will aim to explore the forms and flows that, I argue, comprise the digital mapping assemblage otherwise called Sukey. Only in the methodological chapter will these forces come back together under their umbrella terms – as engine, as windscreen and as wheels.

To understand these 'disruptive activities', chapter 1 explores the recent history of public order policing in the UK, as well as the development of activist manoeuvres. A plethora of techniques have been exercised by the police over the last 30 years, and are characterized by two recent, distinct operational phases: a territorial switch and a 'data-driven' shift. The first of these arose in the 1990s as the benefits of containing ('kettling') usurped the benefits of dispersing protesters during demonstrations. The most recent of these, increasingly dominant since the mid-2000s, has seen public order policing exercise 'anticipatory' techniques to minimize the potential for future disruption at demonstrations. Only in tracing these shifts can one start to contextualize efforts by protesters to disrupt urban life beyond the routed, 'A-to-B' demonstration. Then, three activist manoeuvres will be detailed: the occupation, the 'splinter' and the 'rhizome'. I argue that each has been devised as a particular response to (a) containments and (b) A-to-B protests.

Appropriately, in the next chapter I develop the term 'disruptive cartographies' to grapple with these recent data-driven shifts. Whilst necessarily situated in a wider discourse on disruptive technologies and disruptive platforms (such as the ridesharing application Uber), it also is primarily grounded in legal definitions on the tactical, territorial and spatial nature of public order policing in the UK. In other words, 'disruption' is a key dynamic through which any potential protest mapping platform must operate. Nevertheless, it takes inspiration from and works through a range of other critical cartographic terms in order to augment this argument, with 'tactical cartography' and 'autonomous cartography' deserving of particular attention.

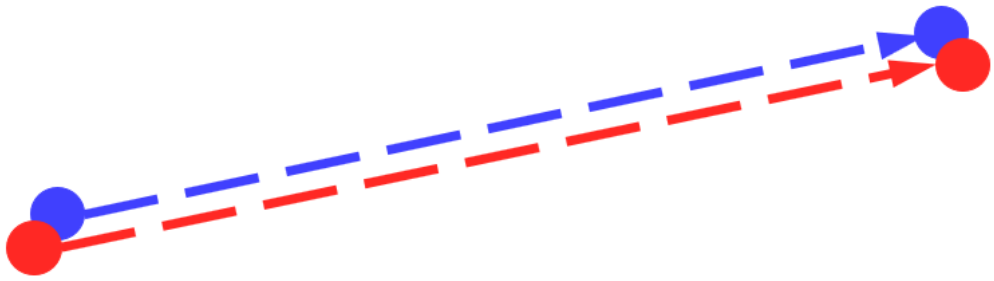


Fig 1.3 | A-to-B

In chapter 4, I look to how the digital mapping interface has enabled this disruptive activity to be performed. Firstly, through a re-purposing of an '8-bit' aesthetic that playfully positioned the platform as an independent, counter-cultural project rather than a slick, modern tool. Then secondly, through its operation as a mobile interface inviting or 'affording' particular kinds of interactions such as strokes, taps and double-taps. These coherent elements – aesthetic and interactive in nature – combine to streamline the ordering of cartographic phenomena.

Yet the disruptive activities undertaken during protest events to evade police manoeuvres are not carried out risk-free. In fact, 'risk' is a state variously exercised, calculated, advanced as well as celebrated, intensified, mitigated against or sometimes ignored by activist navigating through protest events. To understand it, chapter 5 considers the concept of 'calculable territory' (Hannah 2009, 66); a process through which geo-carto-territorial ambitions are realized. Yet little work has

been done on the calculable practices of non-sovereign bodies. This chapter seeks to change this by considering Sukey as a platform for generating 'event-based knowledges' (Hannah 2009, 68). Going further, however, I argue that disruptive cartographies operate through an anticipatory logic, working to calculate future as well as present situations that may threaten its efforts to map territory.

In the methodology chapter I detail the interviews conducted, protest events attended and textual analysis undertaken in order to do justice to the digital mapping assemblage. I do so with the help of an automobile metaphor that looks variously at the 'engine', 'windscreen' and 'wheels' of the assemblage to think through how each becomes integral to its operation. In this, I aim to translate the conceptual chapters before – on manoeuvres, disruption, interfaces, risk and failure – into on-the-ground empirical evidence as manifested in the words, gestures, actions and materials produced during and after the platform was live.

Thus, the empirical chapters are divided according to this metaphor. In the first of these, I look into the 'engine' of the project comprising of various material and discursive elements both cartographic and para-cartographic in nature that 'fuelled' navigational possibilities. I evidence this with reference to promotional videos, platform logos, a 'survival guide' produced in the build-up to one protest event, the platform's shifting basemap, and the desired communication format as specified by the developers. Each, I argue, contributed significantly to the ongoing existence and utility of the platform.

The second of these empirical chapters looks to how the platform enabled users to comprehend, calculate and make decisions regarding various phenomena. The navigational knowledges generated through it can be, I argue, divided into three 'anticipatory layers' each requiring a step-change in efforts to map them. Sukey, I contend, relied on the pre-existing mapping of the built environment (buildings, streets) and temporary features (metal barriers, fences) put in place to manage crowd control during a protest event. Its primary role, therefore, was to capture and

communicate ‘active phenomena’. That is, to map collective manoeuvres performed both by police and other activists. This required a great – and perhaps impossible – degree of anticipation. In its absence ‘second-wave’ student activists became reliant on institutional knowledges ill-equipped to deal with these active phenomena.

The last of the empirical chapters explores four manoeuvres I refer to in turn as: ‘occupations’, ‘splinters’, ‘rhizomes’ and ‘containments’. Whilst each entail very specific spatial forms and engagements, only one of these I argue was especially bound up in the deployment of a disruptive cartographic platform – the rhizome. In essence, the manoeuvre’s ‘cat-and-mouse’ nature (with protesters and police engaged in running, roving altercations) furthered a more mobile, playful kind of protest during the array of student and anti-austerity events in question. In any case, I illustrate each with reference to one or two moments witnessed during two protest events.

By way of conclusion, I unpack three different failures of the Sukey platform. The first of these concerns the cartographic capture of phenomena, and the difficulty of anticipating future manoeuvres. The second points towards the inability of the platform to enable a continued ‘correspondence’ between cartographic ‘signposts’ within demonstrations. The final failure, in a narrative emergent from interviews with developers and strategists in the Sukey team, concerns an overarching ‘crypto-cartographic’ failure that struggled to comprehensively deal with cartographic privacy necessitated by activists’ subjection to (or, at least paranoia of) data-driven anticipatory policing. In short, I suggest that this particular period of cartographic deployment is never to quite repeat itself again, due to the ‘consolidation’ of various data-driven techniques and approaches to managing street protests. Nevertheless, I posit what a ‘carto-future’ may look like in light of such revelations.

Chapter 2 | Manoeuvres

In this chapter I explore the performance of collective, choreographed movements or 'spatial manoeuvres' practiced by both police officers and activists during a series of protest events in the UK, from 2010-2015. I do so in order to contextualize, historicize and situate the development of the Sukey platform.

Since 2001, the containment or 'kettle' has risen to prominence as the most infamous public order policing manoeuvre deployed during protest events. First devised by the German police, it was used against anti-nuclear demonstrators in Hamburg in 1986 (Sørli 2012, Wood 2014). However, up until 2001, public order policing in the UK was focused strictly on *dispersing* protesters. Following the Poll Tax Riots (1990) there was a gradual switch in operational emphasis to the *containment* of protesters during demonstrations, in order to prevent possible outbreaks of disorder (Waddington 2009). I argue that the manoeuvre is part of a much longer 'paramilitary drift' (Northam 1988, 29) in public order policing in the UK stretching back 30 years.

The containment has many forms. It can be deployed statically as an immobile enclosure, as a moving mass facilitating a mobile protest, in a 'hyper' form in order to compress protesters, or can be used with the help of physical infrastructure such as bridges and buildings. Whilst it is ostensibly a manoeuvre to enable the enclosure of a cluster of individuals, I argue that since 2010 it has also been 'data-driven'. In other words, that the containment manoeuvre has enabled the mass capture of personal data from those contained, akin to a digital variation of 'accumulation by dispossession' (Harvey 2004, Thatcher et al. 2016), forming what Till Paasche (2013) has called 'coded police territories'. In so doing, it has morphed from a manoeuvre designed originally to prevent *immediate* or *immanent* disruption, to a manoeuvre ensuring the minimization of *future* disruptive activities.

In response to this, protesters have developed an equally ingenious set of manoeuvres. These build on an assortment of established knowledges and practices that have enabled the continuation of activist engagements during protest events in the UK and throughout the world. Each of these manoeuvres entail a different spatial logic, represented by a schematic diagram at the beginning of each section. I argue that not all were integrated with, or mediated by, the Sukey platform, and as such, did not all help to generate 'cat-and-mouse games'. Nevertheless, each manoeuvre was deployed a) in order to counter police containments and b) to challenge regulated, anticipated and sanitized forms of public protest such as the so-called 'A-to-B' demonstration.

This chapter proceeds by introducing three manoeuvres witnessed during two protest events in 2014, and which are known to have been repeatedly performed at demonstrations held between 2010 and 2015. The first of these manoeuvres is the 'occupation'. In recent years it has seen a 'popular' (Gerbaudo 2012, 10) and 'populist' (Laclau 2005) resurgence with encampments springing up everywhere from parks in New York and London, to squares in Cairo and Madrid. In all these instances, I suggest the rationale has been to establish new societal rules *beyond* such spaces by first establishing them *in* such spaces. Accordingly, the taking of space through occupation is concerned with territorial control. In so doing, efforts are directed to making public spaces safe and hospitable.

Another manoeuvre I call the 'splinter'. Differing in spatial form from the occupation, participants in a splinter do not 'occupy' space. Instead, the manoeuvre is a literal attempt to break away from pre-agreed A-to-B demonstration routes. It cannot, following the definition I use, exist independently but must always form as an offshoot from a larger body of protesters. This, I contend, is both its greatest strength and weakness. Nevertheless, it satisfies a similar latent desire for disruption as the occupation of space; albeit in a resolutely more transient, mobile form.

The final manoeuvre is the 'rhizome'. An empirical instantiation of Deleuze and Guattari's (2011) favoured form, the rhizome is an intensive, mobile, unpredictable and 'rootless' manoeuvre deployed to maximize disruptive capacities during protest events. I argue that unlike the previous two manoeuvres the rhizome is neither the main body of the protest event (like an occupation) nor does it directly emerge from such (like a splinter), but is generated only from a latent force within and beyond it. The switch towards certain public order policing tactics created the conditions for, and precipitated the rise of, the Sukey platform in order to generate, mediate and communicate such efforts. I move on to evaluate the efficacy of these manoeuvres, in relation to the affordances of the Sukey platform, in chapters 7, 8 and 9.

Containment: History, Form and Legality

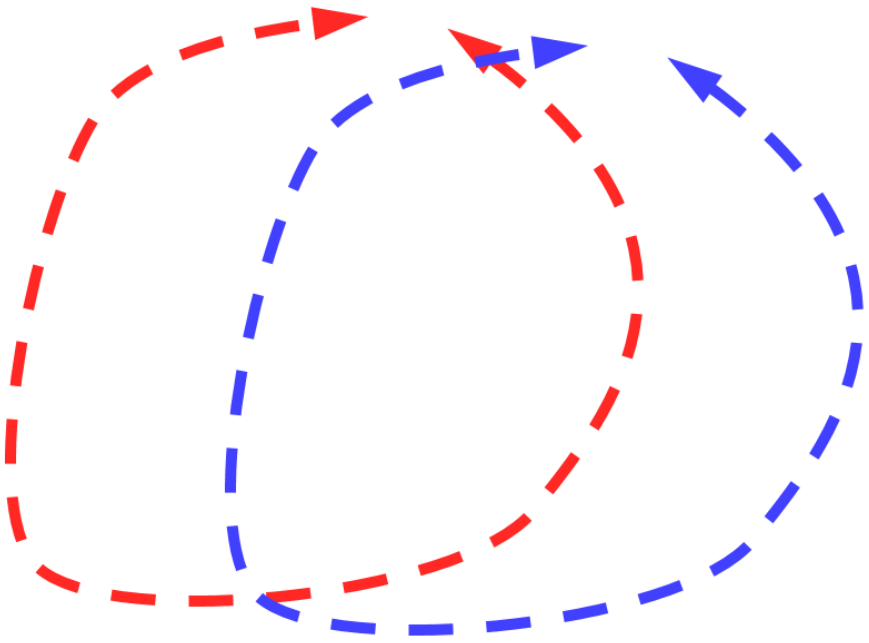


Fig 2.1 | Containment

As Lesley Wood (2014, 37) suggests, kettling techniques were used against German 'anti-nuclear demonstrators' in 1986, and according to Scott Sørli (2012, 2) 'the earliest well-documented police kettle occurred in Hamburg on 8 June 1986'. It has since become the principally deployed manoeuvre in public order situations in the UK, being transported from mainland Europe in 1995 and deployed against 'disability rights protesters' in Parliament Square (Wood 2014, 37). However it was only in 2001 that the manoeuvre morphed into a more recognizable form when deployed during a May Day demonstration, to contain 1,000 protesters at Oxford Circus (*Guardian* 2001). Peter Waddington suggests it was developed in response to the Poll Tax Riot (1990), during which dispersal tactics used on the day were largely 'counter-productive', succeeding in 'spreading the disorder that had occurred in Trafalgar Square throughout the West End', rather than diminishing it (Waddington 2009, n.p.).

The *Guardian* report from the May Day event draws attention to some of the key dynamics that continue to govern its use. The containment itself lasted for over 4 hours, beginning at 2.45pm. At 3.21pm, 'regular uniformed' officers are replaced with (or transform into) 'officers in riot gear' (*Guardian* 2001, n.p.). At 4.15pm an announcement is made informing those within that they are being contained to prevent further disorder (*Guardian* 2001, n.p.). At 7.20pm activists are only released on the condition they are searched and photographed (*Guardian* 2001, n.p.). Each of these elements – the use of riot police, communication of conditions of containment, and personal data-collection for evidence-gathering and forward-intelligence purposes – continued to define the use of containments from 2010 to 2015. Some, I argue, have intensified in a 'data-driven' era.

Scott Sørli (2012) identifies four different kinds of containments. The first of these is a 'police kettle' (*polizeikessel*) and refers to the most common, static containment. The second is the 'wandering kettle' (*wanderkessel*); a type of moving containment in which the police 'arrange themselves in front of, to the sides of, and behind protesters as they march' (Sørli 2012, 2). In such a manoeuvre the police have control over the territorial extent of the protesters encircled,

resulting in the ability to exercise this spatial power as and when desired. The third type identified by Sørli does not have a direct German translation, but is referred to as a 'hyper kettle' and also rather ominously as a 'compression machine' (Sørli 2012, 2). In this the police 'link arms, push forward firmly, compressing people against each other and any available building facades', or as Joyce and Wain describe, such a manoeuvre involves the police 'containing protesters in a cordon and gradually decreasing the space inside' (Joyce and Wain 2014, 155). 'Bridge kettling' is the final type of containment, the earliest of which, according to Sørli 'occurred on the Pont de la Guillotière in Lyon, on 20 October 2010' (Sørli 2012, 2). More infamous, however, was the Westminster Bridge containment during the student demonstrations in December 2010, as vividly documented by the journalist Dan Hancox (2011a, 2011b).

1986 | Introduction of Public Order Act. Imposes a number of restrictions on public protest. Codifies 'disruption' for the first time.

June 1986 | First use of a containment (*wanderkessel*) in Hamburg, Germany at an anti-nuclear demonstration.

March 1990 | Poll Tax riots, London. Significant disorder across central London.

1990 | Slow transition from primacy of tactics of *dispersal* to *containment* begins.

October 1995 | First recorded use of a containment in the UK, at a disability rights demonstration in Parliament Square, London.

June 1999 | J18 'Squaring up to the Square Mile' demonstration, City of London. Dispersal tactics still prevalent.

May 2001 | Significant use of containments at a May Day demonstration in Trafalgar Square, London. Leads to a succession of legal challenges regarding its indiscriminate nature (*Austin*).

April 2009 | G20 protests, City of London. Widespread use of containments.

June 2009 | Home Affairs Committee release 'Policing of the G20 Protests' report. New guidelines regarding the deployment of containments drawn up.

December 2010 | Students, journalists and others contained on Westminster Bridge during anti-tuition fee rise protests. Sukey 1.0 is launched.

Fig 2.2 | Timeline of public order policing in the UK

The containment is often characterized as a preventative measure of 'last resort'. However, with an increasing '(para-)militarization' of protest policing within the UK over the last 30 years (see;

Jefferson 1987, 1993; Waddington 1987, 1993; Northam 1988; Hills 1995; Della Porta and Reiter 1998; Reiner 1998) and a more recent 'militarization' in the US[1] (Elmer and Opel 2008, Wood 2014), its frequent use during student and anti-austerity demonstrations in the UK was widely scrutinized. Previous to May Day (2001) the principle public order policing tactic involved the *dispersal* of protesters. The 'Carnival Against Capitalism' (or, J18) in 1999, I contend, was the last protest event in the UK at which the dispersal of protesters took precedent over containment. A copy of an action map designed for the event and distributed in advance of it exists within the 56A Infoshop in Southwark, south London. Arguably the map's production, along with the disruption it caused, led to a wholesale change in public order policing in the UK.

Map 2.1 | J18 'Squaring up to the Square Mile' map

[1] Although the history of kettling is more commonly Anglo-Germanic, one of the most infamous deployments occurred during a G20 protest in Toronto in June 2010. As Neil Smith and Deborah Cowen (2010, 29) note, this 'effective siege' led to the 'arrest and jailing of a larger number of people…than in any other event in Canadian history, with 'more than 1100 people…arrested and detained' (Smith and Cowen 2010, 29). Over five years since the Toronto G20 containment, Superintendent Mark Fenton of the Toronto Police Services was found guilty of 'unlawful or unnecessary arrest…' (Krishnan 2015, n.p.) of 260 people, in one containment, on a single day.

Whether in static, mobile, 'hyper' or 'bridge' forms, a containment is deployed to curtail the disruptive capacity of an assembled crowd by denying them territorial possibilities. Whilst the objective of 'confin[ing] rioters to a defined area' might have been listed in the original *Public Order Manual* (1984) (see; Northam 1988, 183), with various manoeuvres such as the 'wedge' and the 'cordon' noted, the more specific art of creating a containment in order to minimize disruption is a recent phenomenon.[2]

It is described as a 'contingency tactic to be used when alternative tactics to prevent serious disorder, serious injury or loss of life have failed or are expected to fail' (NPIA 2010, 110). Although, '[i]n some circumstances the tactic may have other objectives (e.g., to prevent crime, arrest offenders)' (2010, 110). Those who find themselves in a containment are not permitted to leave until senior officers are satisfied the threat of disruption has significantly diminished. During the May Day demonstration in 2001 this was over 4 hours. On Westminster Bridge in December 2010 it was a similar length of time (Hancox 2011c). As is suggested in the National Policing Improvement Agency's (NPIA) *Manual of Guidance on Keeping the Peace* (2010, 110); '[c]ontainment[s] should last only as long as is reasonably required' with this criteria being decided by operational police command.

In 2005 a legal case was brought to the High Court by Lois Austin and Geoffrey Saxby to claim damages for 'false imprisonment and a breach of… [the] right to liberty under the European Convention [on Human Rights]' (*Guardian* 2005, n.p.) after being contained during the May Day demonstration in 2001. Following an unsuccessful appeal in 2007, the case was then heard in the European Court of Human Rights (ECtHR). The original decision was upheld (*BBC News* 2012), with the judges ruling it was the 'least intrusive and most effective' tactic available to the police at the

[2] The *Public Order Manual of Tactical Options and Related Matters* was composed by the Association of Chief Police Officers (ACPO) in 1984 to codify public order policing tactics and manoeuvres. Its existence was only made public following the collapsed Orgreave Trial in 1985. It continues to exist in an adapted form today. For a comprehensive, but likely outdated version see ACPO (2004). The NPIA's *Manual of Guidance on Keeping the Peace* (2010) is the most recent public derivative of the original manual.

time (Lewis 2012, n.p.). However, despite this, the ECtHR concluded that kettling 'must only be done in the face of an imminent breach of the peace, must be done in good faith, must be proportionate and must be done for no longer than is reasonably necessary.' (Scorer 2012, n.p.). These multiple rulings, along with recommendations made by the Home Affairs Committee (2009) following the G20 demonstrations, have pressured police forces in the UK into setting more rigorous guidelines for deploying containment manoeuvres during public order situations. However, as incidents during student and anti-austerity demonstrations from 2010-2015 have shown, it is debatable as to whether these factors are actually taken into consideration.

Etymology; as Concept

Polly put the kettle on,

Polly put the kettle on,

Polly put the kettle on,

We'll all have tea.

Sukey take it off again,

Sukey take it off again,

Sukey take it off again,

They've all gone away.

Traditional Nursery Rhyme derived from 'Jenny's Baubie' by Joseph Dale (1803)

The English language noun 'kettle' derives from the German verb *einkesseln* ('to surround' or 'to encircle') and the past participle *eingekesselt*. The root of both of these – *kessel* – also has more topographical connections; referring to a mountainous feature that surrounds or encircles a low-lying area such as a plain or valley.[3] In English, the word kettle only refers to a vessel that boils water. In German the direct translation is a cauldron. Up until its recent deployment as a public order policing manoeuvre the word kettle had no associated verbs, such as 'to kettle' or 'kettled' – only existing as a noun to refer to the object itself. When one boils water in the kettle the term used is not 'kettled' only more generically as 'boiled'. The traditional nursery rhyme that opens this section refers directly to this Anglicized definition.

The nursery rhyme tells the story of an ingenious tactic hatched by Polly and her sister Susan (referred to as Sukey) who would, in order to avoid playing a game decided by their brothers, pretend to set up a tea party. Upon realizing what they were about to be forced to play, the brothers would run away in fear. The poem itself has two parts, the first of which concerns the apparent 'putting on' of a kettle in order scare the brothers into leaving. This setting-up would usually, as the story goes, scare them so much they would abandon any plan they had to get the sisters to play with them on their own terms. The second, arguably more devilish part, involves the 'taking off' of the kettle once the girls had realized their aim to scare their brothers away had been successful. The Sukey platform is named in homage to Polly's sister Susan who promises to 'take off' the kettle.

There are four things to say based on this short reading of the nursery rhyme and the associated Germanic etymology of the term. Firstly, the act of kettling – despite its documented brutality – is derived most evidently in the English context from a playful, even devilish and devious, act in order to avoid an undesirable event occurring. Polly's 'putting of the kettle on' is a scare tactic designed to force the dispersal of her brothers in order for them to avoid coercion into a game neither

[3] My thanks go to Jana Wendler for this definition.

wishes to play. Containments are very often carried out in protests to the same effect with similar 'fake' kettles deployed to scare protesters in dispersing. I will discuss the carrying out of such a 'fake' containment during an NCAFC demonstration in chapter 9. Perhaps unlike in the nursery rhyme, however, if individuals ignore the threat the police will ordinarily carry through with it anyway; subjecting those to containment against their wishes.

Secondly, from the Germanic root, kettling is a tactical endeavor devised in a military context. As Sørli (2012, 2) suggests, the 'German word for military encirclement…is *kesselschlact*, literally 'cauldron battle'. Similarly, football stadiums are often referred to as *kessels* in the cauldron-like sense of the term. When the atmosphere becomes particularly charged in such it is referred to as a *hexenkessel* or a 'witches' cauldron'.[4] Thus the containments executed during protest events in the UK are emblematic of the 'paramilitary drift' identified by Northam (1988, 29) in public order policing over the last 30 years, through which military and colonial policing manoeuvres have become codified as normal police tactics.

Thirdly, back to the domesticated English definition, a kettle (or otherwise a kind of cauldron) involves the kinetic process of boiling in which liquid particles (usually water) become energized and turn into a gaseous form, creating steam. Thus the physical excitement of water particles is often metaphorically likened to the bodily responses by kettled individuals who, when contained in an ever-smaller and restricted space, are forced to either submit to the manoeuvre at hand or – like steam escaping from a boiling kettle – break out from it. Although presented as an equal choice (unlike the water particles that have only one option of escaping by transforming to a gaseous state), individuals usually have little opportunity other than to submit to what Rory Rowan calls the 'logic of the kettle' (Rowan 2010, n.p.). Although synonyms such as 'pockets' and 'corrals' are often used in reference to containments, neither call forth the pressurizing force of it unlike the term kettle.

[4] Thanks again to Jana Wendler for alerting me to this delightful turn of phrase.

Lastly, as suggested above, the kettle expresses a topographical formation. As such, the kettle does not simply refer to a temporary manoeuvre or deployable tactic performed by police officers or military personnel but an altogether more solid, enduring geographical feature. Such a formation allows clearer lines of sight from higher, surrounding terrain onto lower, surrounded positions. No other manoeuvre is deployed during protest events for as long as containments. Whilst kettles can range in duration from temporary cordons penning protesters in for minutes, they are routinely deployed to contain large volumes of demonstrators for hours. The reference to solid, enduring topographical features is therefore a relevant one. Further, this reference to a mountain range or similar – thus allowing for a hierarchical visioning of those below and encircled – is a relevant description of the surveillance practices performed in concert with the kettle itself.

This is why, I argue, the noun 'kettle' and the verbs 'to kettle' and 'kettling' have entered public discourse so definitively. Unlike the administrative speak of containment; kettle, to kettle and kettling reference these playful-elemental-tactical-geo-territorial definitions directly. Although considered an inappropriate term by the Met, both 'kettles' and 'kettling' have been used liberally in traditional print and new web media, in tabloid and broadsheet publications as well as in the legal and technological press (see, for instance; Campbell 2009, Rowan 2010, Hudson and Price 2011, Geere 2011, Ridler 2011, Whittaker 2011, *CBC News* 2012). In all English-language publications, 'kettling' has an unambiguous meaning referring to the act of public order police containment of protesters. As such, it is often more apt to use in place of the more general term 'containment'. I use both interchangeably throughout this thesis purely for variety.

Data-driven Kettles

Another aspect of the manoeuvre demonstrates an intensification in a new, data-driven age. In the Home Affairs Committee Report one of the identified failures of the policing effort during the G20 Protests in London in 2009 was the lack of communication both with those contained within

the kettles and between officers – as well as more obvious failures concerning the use of force. Within it, the committee proposed that:

> The police and HMIC [Her Majesty's Chief Inspector of Constabulary] should consider whether it would be better, as far as possible, to use *intelligence* to identify potentially violent protesters and contain them while simultaneously filtering out small groups of peaceful protesters. This would reduce the need for "mass" clearances, limit the use of force (as the contained area would be that much smaller), be a more efficient use of resources and be more in the spirit of the *Austin* ruling. (Home Affairs Committee 2009, 17, emphasis added)

Whilst varying intelligence units have existed within public order policing operations in the UK for a considerable length of time (at least pre-2004), both Forward Intelligence Teams (FITs) and Evidence Gathering Teams (EGTs) have come to form a central role in relation to the most recent deployment of containments during the period between 2010 and 2015. Both FITs and EGTs provide senior officers with intelligence that aid in compliance with identified good practice and the legal restrictions laid down in the *Austin* ruling. This is what has variously been termed 'predictive' or 'preemptive policing' (Graham 2011, Paasche 2013). Whilst the physical act of restricting the movement of protesters on the day of an event may prevent disorder being carried out *there and then* it is rather less equipped at dealing with disorder in the near future (the next week, etc.) or on the general *horizon* or *distant* future (the forthcoming months, years, etc.). FITs and EGTs allow the police to anticipate future actions by collecting data on those contained within a kettle.

One of the perceived reasons for the proliferation of disorder during the London riots in 2011, as speculated on by Bloom (2012) and others (Halliday 2011) was the rise of private, mobile messaging platforms such as Blackberry Messenger (BBM). As James Ball and Symeon Brown (2011, n.p.) wrote in the *Guardian*; '[t]he free, secure BBM service was an easy way to share

information on where riots were and what police were doing'. It was during the riots that, as Raekha Prasad and Yemisi Adegoke (2012, n.p.) add; 'the gap between police intelligence and what people in riot-affected communities knew about pending unrest was often glaring'. In the years since, similar platforms to BBM have become ubiquitous. Although Whatsapp is a market leader, Facebook Messenger, Telegram and Snapchat are all major players broadly offering the same private, mobile, cross-device, multi-media and social communications experience. The period of student and anti-austerity protest from 2010 to 2015 is defined by this technological revolution in which the nature of communication prior to, during and after such events has changed radically.

A little-known 'text-message broadcast system' (Hirsch and Henry 2005, n.p.) called *TXTmob* was the first to be used to organize activists digitally, on-the-go, and in response to the rise of 'strategic incapacitation tactics' such as 'no-protest zones, less lethal weapons, and strategic arrests' (Zajko and Béland 2008, 721). As the Invisible Committee (2014, 1) recall, it was:

> …invented by American activists [the Institute for Applied Autonomy, or IAA] as a way to coordinate via cellphones during protests against the Republican National Convention in 2004. The application was used by some 5000 people to share real-time information about the different actions and movements of the police. Twitter, launched two years later, was used for similar purposes…

Thus I argue that, in concert with new developments in forward-intelligence and evidence-gathering, the containment has been deployed at contemporary protests as a form of data-gathering on organizers, participants and sympathizers via photographic, textual, video and cartographic means. The rise of rudimentary communication platforms such as *TXTmob* intensified, rather than merely gave birth to, these efforts.

Indirectly, containments offer data-collection possibilities; often being 'viewed by the police as a source of valuable intelligence' (Network for Police Monitoring [Netpol] 2015, n.p.) in order to

profile activist identities, relationships, connections and for use at future events. Although the handing over of personal data on the condition of release is now unlawful in the UK,[5] the mass arrest of all those contained is still common. In fact, the largest ever mass arrests witnessed in the UK have also been the result of kettles deployed in the last five years. All of these have occurred on the streets of London, and have been conducted by the Met.

On most of these occasions individuals were neither charged, nor convicted, of a public order offence. 145 arrests were made in a containment at the Fortnum & Mason department store during an anti-austerity demonstration in 2011 (Bastani 2013), 182 cyclists were arrested under similar circumstances during a Critical Mass event near the Olympic Stadium in July 2012 (Netpol 2012), a further 59 were arrested during an anti-British National Party (BNP) demonstration in central London in June 2013 (Dee 2014), and another 286 shared the same fate during a counter-protest to the English Defence League (EDL) in east London in September 2013 (Netpol 2013). The latter of these is the largest mass arrest in British history. 10 were found guilty in relation to the first (Malik 2011), 5 more a result of the second (Richards 2013), a case involving another 5 in the third collapsed due to a lack of evidence, and only a further 2 are known to have been charged in the final case (Dee 2014).[6]

This emphasis on anticipating future actions by way of collecting data on activists, *en masse*, is dependent upon associative forms of profiling that have become prevalent in a big data era. Emergent within the 'diverse worlds of risk management consulting, computer science, commercial logistics, and data visualization' (Amoore 2013, n.p.) these new calculative methods

[5] See; Mengesha vs. Commissioner of Police of the Metropolis (2013): http://www.bailii.org/ew/cases/EWHC/Admin/2013/1695.html

[6] Across these four landmark events a total of 17 people have been found guilty of a mixture of crimes including aggravated trespass (Criminal Justice and Public Order Act 1994, n.p.), failure to remove an item of clothing used to conceal identity (such as a scarf or bandana – Criminal Justice and Public Order Act 1994, n.p.), and other minor public order offences, out of a grand total of 672 originally kettled and arrested. No single individual was convicted of a serious public order offence under the *Public Order Act* (1986).

ascribe value to individual data points (name, age, date of birth) by connecting them. Novel streams of data produced by an array of digital devices (smartphones, cameras, GPS receiver, etc.), and coded objects (credit cards, building access cards, etc.) in a variety of circumstances (purchasing goods, travelling internationally, applying for credit, etc.) can be drawn together to form algorithmic 'rules of association' (Amoore 2009, 51). These otherwise invisible connections are thus rendered visible, for the purposes of making '*actionable* security decisions' (Amoore 2009, 52, original emphasis). 'By connecting the dots of probabilistic associations, the algorithm becomes a means of foreseeing or anticipating a course of events yet to take place' (Amoore 2009, 52). As Transmediale (2015, n.p., original emphasis) critically suggest, it is these methods that have led to '[l]ife… being increasingly governed by a logic of *capture all* as a never-ending enterprise of predictive control'.

Although these associative methods of data analysis are perhaps best witnessed in relation to sovereign border control – as discussed in chapter 5 – they are equally deployed in relation to what officials in the UK now call 'domestic terrorism'. That is to say, activists engaged in the organization and attendance of protest events such as student and anti-austerity demonstrations. That this procedure often relies on the mass collection of data from containments initiated at protest events is thus a marked intensification of the manoeuvre in relation to a pre-data-driven era. In the next section I wish to explore the other side to this battle: through the manoeuvres devised, developed and deployed by activists in response to containments.

Occupation

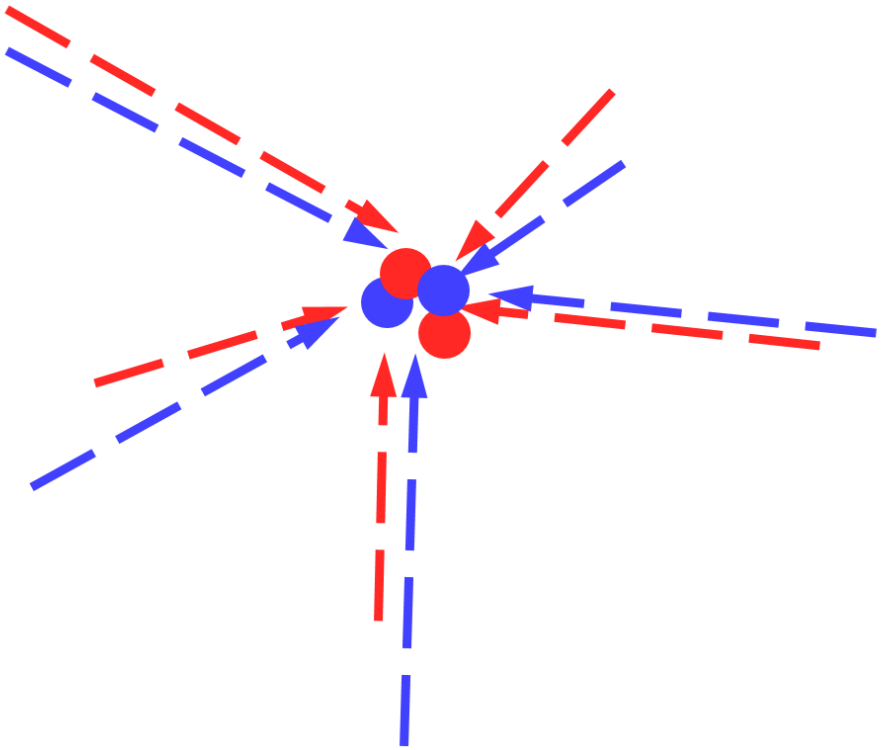


Fig 2.3 | Occupation

The 2010 student movement began with a series of occupations of UCL lecture rooms. Whilst it is a well-established activist tactic (see; Pickerill and Krinsky 2012), ostensibly public occupations – such as Occupy London or *Movimiento 15M* (15M) in Madrid – do not necessarily or directly involve seizing the means of production nor re-valorizing nominally empty or underused spaces. Instead, such occupations are rendered as semi-permanent protest camps (Feigenbaum et al. 2013) or autonomous spaces (Abellán et al. 2012). The purpose, therefore, is not so much related to concrete material processes *per se* (unfair working conditions, absentee landlords, etc.), but dedicated to the reclamation of public (or quasi-public) space. This is emblematic of a distinctive 'populist' (Laclau 2005) turn in political identity and contemporary society.

To this end, occupations must first involve the undoing of existing spatial relations (this space is not what it was), through a process of abstraction (this space is interchangeable), followed (if

successful) by an importation of a new, previously suppressed or ignored set of socio-spatial relations (this space is now something different). In all cases the occupiers seek to overcome existing sovereign power in such spaces in order to govern alternatively, often to nullify its administrative legacy 'as if it was never there'. Barker's (2012) critique of Occupy Wall Street gestures precisely towards this effort, with occupations driven by the 'emerging logics of aggregation' (Juris 2012, 259).

Yet, the occupying manoeuvre is a contingent one governed by its own precarity. As a collective, resistant force, it is a transient, temporary manoeuvre that does not always seek an immediate legacy in the public space it occupies. The main aim of the Occupy movement, therefore, was not the taking of public space, *per se*, but the transformation and democratization of society. Those that nominally fail (see; Alimi 2012, Zamponi 2012) do so for a variety of structural, organizational and symbolic reasons. Yet even the more long-standing Occupy camps – Wall Street, St Paul's – nevertheless generated some unresolvable tensions (Anonymous 2012, Halvorsen 2015).

The mechanics of any occupation must, despite this acknowledged precarity, be built to make space hospitable. It is not, as will be discussed in chapter 9, a manoeuvre designed to outflank, evade or avoid any police containment tactics. Instead, its main force is in locating and entrenching a particular space that makes police containment, if not impossible, then, undesirable. In other words, an occupying manoeuvre seeks to render a containment useless or impractical. As Halvorsen suggests in relation to Occupy London:

> …taking space involved a tension between *moments of rupture* and, lived space times of intensity that provide an opening to new possibilities, and *everyday life*, the routines and rhythms through which social life is reproduced, a tension that was made visible in the contrast between the two camps [of St Paul's and Finsbury Square]. (Halvorsen 2015, 402, original emphasis)

Thus, the encampments Halvorsen speaks of were not solely dedicated to generating 'moments of excess' (Free Association 2011, 33) 'ephemeral' (Cobarrubias and Pickles 2009, 37) or otherwise; despite the obvious euphoria that comes with taking space. But more accurately, 'these ruptures took the form of particular territories, occupied spaces from which new social relations and values are created' (Halvorsen 2015, 403). In essence they became – at least in an idealized if not wholly realized form – spaces of habitation and care necessarily oriented towards social reproduction.

Nevertheless, it is through this framing that we can understand the motives for occupation as a contemporary manoeuvre in and of itself – as well as a counter-manoeuvre against the containment. The occupations I focus on here were carried out during a TUC demonstration in London on October 18th 2014, and during a NCAFC demonstration in London on November 19th 2014.

Splinter

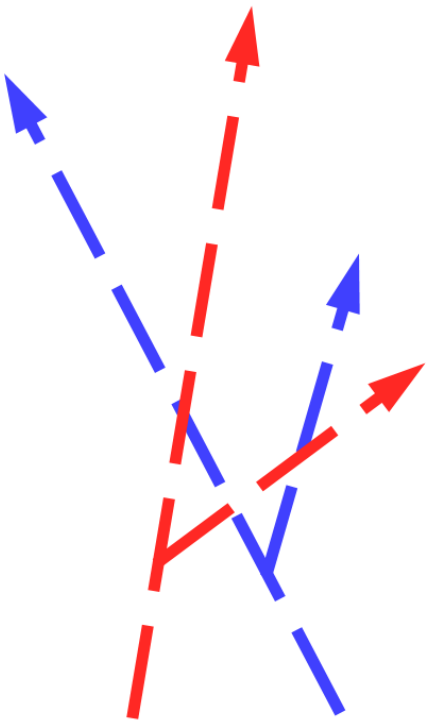


Fig 2.4 | Splinter

The ‘splinter’ is an altogether different beast. Commonly defined, it refers to a fragment or shard of material broken off from an object, such as a plank of wood, and inserted into another body. As such, it can only be defined in relation to this main object, which it is always significantly smaller in volume than. A splinter is invariably sharp, being violently shorn from the surface of this larger body. Moreover, it must be defined in relation to the softer, more unfortunate body subject to penetration by the splinter in question. Think of the way the splinter makes its way through the subcutaneous layer of human skin to lodge itself awkwardly inside. As a ‘foreign body’ splinters expose the delicate nature of the subject body, as well as the sharpness of the splinter and the volume of the main object.

Synonyms for the splinter might include that of the *fork*. When a developer takes the original source code for a software project and develops their own version with it, it becomes known as a ‘project fork’. Forking is common with open-source software projects as developers are not mandated to contact software license owners before doing so and as such, many open-source projects are the result of forked activities. For example, an early fork from the Spanish version of Wikipedia led to the creation of the *Enciclopedia Libre Universal en Espanõl* in 2002 (see; Tkacz 2015). Yet there are differences between a splinter and a fork, most notably in the intensity of the split that each of them denotes. A splinter is sharp and the process of splintering gestures towards an abrupt moment and a certain connected pain. A fork, on the other hand, is more akin to a road travelled down (i.e. ‘a fork in the road’). Whilst similarly spatially-inclined, it does not connote the same degree of force that comes with a possible splinter. It is this force that is more appropriate for what I want to draw attention to here.

As a metaphor for this second type of manoeuvre it is apt. Firstly, the splinter is always derived, and broken away from the main ‘body’ of the demonstration. Those who comprise what are often called ‘splinter marches’ are made-up of protesters originating from a main demonstration itself.

Reasons for doing so are various. Often they are pre-organized in advance of the main demonstration. On other occasions, they arise out of particular tactical, 'of-the-moment' decisions in order for protesters to, for example, evade the police. Secondly, the splinter is therefore significantly smaller than the total of the main body. They may comprise of anything between just a handful of people (5-10) to a much larger, more organized and planned splinter consisting of thousands. Thirdly, as splinters they also are defined through their penetration as foreign bodies into other subjects. In an urban setting this splintering usually results in protesters entering into non-designated protest areas in and around the 'official' protest route, often producing a rather strange juxtaposition between protesters and non-protesters (shoppers, tourists and workers, etc.). As such, they become foreign agents in an everyday urban space – shattering the boundaries between protest and non-protest.

It is this effect – of disruption – that often justifies the protest splinter. Once again it is seen by many contemporary activists as a general response to the perceived lack of disruption offered by A-to-B demonstrations. The splinter march is an attempt to enact alternative courses of action before, during and after larger, unified demonstrations. As a result of these three dynamics the splinter is a direct challenge to the containment. Due to its umbilical relation to an otherwise routine, non-disruptive demonstration, the protagonists of a splinter can also hide in plain sight: as participants in the consensual operation of an A-to-B demonstration. The splinter I document in this thesis occurred during a TUC demonstration in London on October 18th 2014.

Rhizome

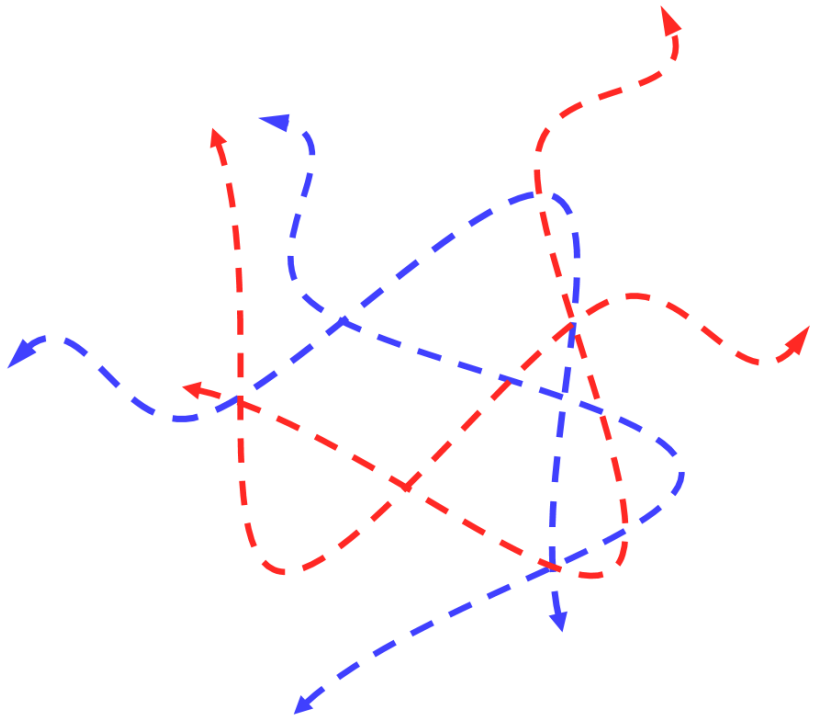


Fig 2.5 | Rhizome

The ‘rhizome’ is markedly different from previous manoeuvres. Unlike an occupation it does not seek to take space in order to hold on to it and to make it hospitable. Further, unlike the splinter it does not have an umbilical relationship with another form. In short, a ‘rhizomatic’ manoeuvre is a rootless tactic that endlessly seeks to colonize space but only temporarily. It is a manoeuvre that is eminently playful in the spatial unpredictability of its operation. In other words, it is the polar opposite of an A-to-B march – with no A or B point to proceedings. As such it is perhaps the containments’ ultimate enemy resulting in often balletic encounters that produce theatrical, ‘frivolous’ or entirely farcical pursuits during protest events colloquially referred to as ‘cat-and-mouse’ games between proponents of the manoeuvre and police (see; *BBC News* 2010, Fahy and Fitzgerald 2010, Rawlinson 2010, Thomas 2013).

The term itself is derived from the Ancient Greek *rhizoma* meaning ‘mass or roots’ and *rhizoo* ‘cause to strike root’. In botany and dendrology it refers to a subterranean plant stem with the

capacity to grow 'diageotropically'. In other words, to travel in the direction of the earth's gravitational pull (downwards) and in opposition to it (upwards). However it takes another, metaphorical, shape in the work of Gilles Deleuze and Felix Guattari (2011). I am not the first to apply it in an activist context. Deleuze's work is widely-quoted in relation to the Zapatista movement as well as Occupy itself (see; Nail 2012), whilst 'assemblage theory' credited to Deleuze and Guattari, and Manuel DeLanda (2006), has also been applied to the spatiality and organization of social movements (McFarlane 2009, Anderson and McFarlane 2011) as well as in relation to ideas around the 'multitude' and 'swarm intelligence' (Hardt and Negri 2000, 2004; Tampio 2009). Yet as Michael Woods et al. (2013, 434) have suggested, 'the full implications' of employing the rhizome as a metaphor to describe social movements 'are rarely teased out', with only Deleuze's 'commitment to joyful affirmation' (Culp 2016, 2) considered. The intention here, is to apply it empirically, and critically, to spatial manoeuvres.

Deleuze and Guattari (2011) identify six key properties of the rhizome that make it applicable to the cat-and-mouse games witnessed during the protest events detailed in this thesis. Firstly, rhizomes possess an endless *connectivity* through which other entities can be attached, re-attached and detached: 'any point of a rhizome can be connected to anything other, and must be' (Deleuze and Guattari 2011, 7). There is no 'core', genealogical or arboreal relation between one thing and another, only an open passage between two or more such things. This emphasizes the rhizome's connective, *heterogeneous* force. In protest events I argue that activists engaging in a rhizomatic manoeuvre collectively move in whatever direction necessary to maintain this heterogeneous urge. In other words, unlike the previous two, the rhizome strikes out wherever it desires. It does not flow at a routine and measured speed *within* or *outside of* the A-to-B demonstration (like the occupation), and neither does it emerge from a larger volume of individuals (as a splinter manoeuvre does). Moreover, the manoeuvre is commonly used to enable participants to join, re-join and disjoin from any number of other protesters engaged in various actions in the midst of a demonstration.

The rhizome is also built on a third principle of *multiplicity*. As Deleuze and Guattari (2011, 8) iterate; '[t]here is no unity to serve as a pivot in the object, or to divide in the subject.' Instead, via 'lines of flight' the rhizome attaches itself to ever more things, its only power being that which is generated through a determination by its participants. As such, the manoeuvre is defined through its *momentum* rather than any core, intrinsic element. The only manner in which it is able to gain power as a tactic is to remain constantly on the look-out for planar opportunities; locations to navigate towards, spaces to temporarily occupy, peoples to subsume. Unlike the occupation, it does so with variances in speed and magnitude; with participants engaging in activities that invariably result in some people being left behind; so long as new opportunities are found. However, this is as much a quality as a critique of the rhizome – more of which will be expanded on in chapter 9. In any case it is worth noting here that this unceasing demand for new territory is never entirely without root, and indeed, is sometimes (if not always) reliant upon a rooting of some kind whether technological, spatial or epistemological.

The fourth concerns the principle of 'asignifying rupture' (Deleuze and Guattari 2011, 10), that is to say, the casting aside of the formality and insistence of 'breaks', 'separations' and other such 'cuts' across objects, bodies and things. In other words, the rhizome has the propensity, like anything else, to sever and be severed; but that in doing so, does not lose anything of its transformative potential. It is this regenerative capacity that allows the rhizome to maintain its force regardless of counter-actions such as containments. 'A rhizome may be broken, shattered at a given spot, but it will start up again on one of its old lines, or on new lines' (Deleuze and Guattari 2011, 10). With each 'break' – that is, with every attempted containment – energies are near-infinitely split resulting in multiple rhizomatic movements strung out in every direction in order to thwart spatial control.

The final two principles bring us back around to the practice of mapping. The fifth and sixth principles of Deleuze and Guattari's concept of the rhizome concern the principles of *cartography*

and *decalcomania*. Accordingly, the rhizome is 'a map not a tracing' (Deleuze and Guattari 2011, 13) and as such is an entirely unique, constructive form that is not built on a 'blueprint'. In other words, it is an entirely novel thing 'open and connectible in all of its dimensions…detachable, reversible, susceptible to constant modification' (Deleuze and Guattari 2011, 13). As they reiterate, '[p]erhaps one of the most important characteristics of the rhizome is that it always has multiple entryways…' (Deleuze and Guattari 2011, 14) and as such can be attached and detached to anything else without the need for a linear ordering.

The rhizomatic manoeuvre, I argue, might be *the* quintessential mapping act. This is in contrast, say, to the staple movements of those taking part in an A-to-B-style manoeuvre which is merely a playing out or a 'tracing' of the pre-established route itself. As such, the primary act of taking part in an A-to-B demonstration is an example of decalcomania. The movements themselves are merely 'peeled' (like a 'decal') from the pre-ordained route and laid down on the world itself – there is no discrepancy, only a neat array between template and action. The rhizome however is exactly the opposite. In other words, there is no template and no array. Nor is there even a discrepancy – no template exists to be referenced against. On a practical level, for protesters, this cartographic contingency generates a powerful political force. For the police, it is this disruptive capacity that must be minimized in the midst of a protest event.

Rhizomes, therefore, do not come in pre-packaged forms and as a result, are not easily determinable. Whilst this presents a grand opportunity for those within the manoeuvre, it presents somewhat of a difficulty for those desiring to map its navigational intentions. Whilst the police are ever interested in 'mapping' (in literal, analytical and metaphorical terms) the movements and intentions of protesters during demonstrations, so the Sukey platform was during its period of activity. In 2014, with the platform dormant, the actions continued. The rhizomatic manoeuvres I focus on here occurred during the TUC demonstration on October 18th 2014, and a NCAFC demonstration on November 19th 2014.

Conclusion

This chapter has presented a genealogy of police and protester manoeuvres in public order situations, beginning with the police containment and ending with activist 'occupations', 'splinters' and 'rhizomes'. Each of the latter have been specific responses to the continued rise, and development of, the former.

The containment or 'kettle' first saw deployment in Germany in the mid-1980s at a time when British police forces were still content with dispersing (rather than containing) disruptive crowds. Although it first saw deployment in the UK during a disability rights protest in 1995 it wouldn't be until 2000 that the manoeuvre morphed into a more recognizable form. May Day 2001 became a watershed moment as 3000 people were contained in Oxford Circus for over four hours, in order to prevent a breach of the peace. Legal challenges to the manoeuvre followed in the High Court (in 2005) and the ECtHR (in 2012) as it faced wider public and judicial scrutiny.

I argue that from 2010 the manoeuvre was intensified by new 'data-driven' desires and intelligence-led operations. This growing obsession with a 'capture all' (Transmediale 2015, n.p.) mentality saw a series of the largest ever mass arrests in UK history; all of which were facilitated by a deployment of a containment. In this new phase of public order policing the manoeuvre has become increasingly facilitated by, and dependent upon, a wider policing assemblage including liaison officers, EGTs and FITs that aid in the recording of audio-visual evidence. This, I further argue, has marked a shift to *anticipating* future demonstrations through associative methods of data analysis and profiling of activists. Put otherwise, what Claudia Aradau and Tobias Blanke (2015, 1) call the '(Big) Data-security assemblage'.

In response to the intensification of containments, activists have sought new and novel ways of conducting protests. Three particular kinds of manoeuvres have emerged in the recent years. These include: 'occupations', 'splinters' and 'rhizomes'. Whilst occupations are a long-established

tactic in activist repertoires the world over, attempts to take specifically public spaces have typified many 2010-2015 protest movements such as Occupy and 15M. The essence of the manoeuvre is a re-designation of public space itself in order to challenge pre-existing and prevailing inscriptions.

The 'splinter' was the first of two ostensibly more mobile, and heretofore uncodified, manoeuvres I have witnessed during protest events in the UK. Instead of formally taking space splinter manoeuvres are designed to break free from routed, A-to-B-style demonstrations in order to disrupt other spaces. Part of the success of the splinter movement is predicated on hiding in plain sight within such a demonstration – acting and operating as compliant, consensual activists – before 'splintering' and actively appropriating space beyond the confines of a routed demonstration. As a result, however, the splinter exists in an umbilical relationship to these larger body of demonstrators and as such must always, eventually, return to being subsumed into its operation later in time.

The final manoeuvre – the 'rhizome' – bears only slight similarity to the splinter, and little to the occupation. Named in reference to Deleuze's concept of the rhizome (Deleuze and Guattari 2011), it is a manoeuvre that is necessarily rootless, endlessly connective, multidirectional as well as heterogeneous. No amount of rupturing, breaking or splitting will cause the end of such a manoeuvre. Indeed, its great ability is its propensity exactly to rupture, break or split. In so doing, it regenerates; gaining strength in every move. At least, of course, in theory. A critique of this will be forthcoming in chapter 9.

One of the main threads throughout this chapter has been the state and practice of 'disruption'. The containment, as has been detailed, is a manoeuvre deployed in order to minimize it. When presented with a situation in which there is a perceived threat of disruption ('serious' or otherwise) to the local community, the police ordinarily impose a kettle. In direct contrast, each of the three activist manoeuvres are direct attempts to *maximize* disruption and deny the

imposition of a containment or any such manoeuvre that seeks to restrict protest. The occupation is a direct attempt to disrupt a pre-existing operation of public space, through an inscribing of alternative value. The splinter disrupts the order of an A-to-B demonstration by challenging its codified boundaries as wrought in (temporary) metal barriers and enforced by event organizers. Then, finally, the rhizome similarly disrupts the A-to-B demonstration by ignoring it completely; instead setting off around city streets in entirely unpredictable ways. The following chapter takes up this disruptive thread more thoroughly, by further attending to the 'data-driven' and technologically-mediated aspects of the protest tactics explored here.

Chapter 3 | Disruptive Cartographies

This chapter explores various tactical, autonomous, and radical conceptualizations of cartography. In order to expand on these, the term 'disruptive cartographies' will be introduced. As will become evident throughout this and subsequent chapters, the term is rooted in the mapping of so-called 'manoeuvres' within protest events. It is these events that have necessitated the rise of 'disruption' as a specialized protest tactic, and therefore the deployment of a digital mapping platform. This mapping practice has emerged from a novel, extra-institutional milieu beyond more traditional organizational forms. The platform itself has pushed the boundaries of cartographic aesthetics, form and practice to generate an altogether unique navigational, geographic and socio-political force.

These disruptive tendencies are not restricted to the cartographic form. The last few years have been dominated by 'disruptive technologies' and 'disruptive innovation' (Bower and Christensen 1995). Whilst these can be characterized as neoliberal in origin and force, they more accurately engender a libertarian impulse that depict both state and market as obstructive to capital circulation and accumulation. On the other hand, disruptive cartographies disrupt the state and market in order to inhibit their operation, rather than to propel or accelerate capitalist processes. The difference between these disruptive tendencies is critical.

The aim of this chapter is to provide a diagnosis of a variety of critical cartographic terms each embodying a different relation between maps, mapping and activism. In charting this terrain it will be necessary to appraise 'tactical media' (Garcia and Lovink 1997), 'tactical cartography' (Institute for Applied Autonomy 2010), 'autonomous cartography' (Counter-Cartographies Collective et al. 2012), and 'radical cartography' (Denil 2011) in turn. I consider each of these in order to draw attention to their limitations. As recent digital mapping technologies have been developed in response to police public order tactics such as containments, they have generated

novel navigational practices. Although each has conceptual import, none provide an entirely sufficient framework to understand the Sukey platform. For this reason, the term 'disruptive cartographies' is preferred. The key dynamics underpinning it are unpacked in chapter 5.

Firstly, I argue that the separation between 'tactics' and 'strategy' favoured by Michel de Certeau (1984), tactical media theorists, and tactical cartographic practitioners, is impossible to maintain in the digital era. Protesters and police have battled to adapt to shifting territorial engagements brought about by networked possibilities, as explored in chapter 2. The activities of each are simultaneously strategic, tactical and logistical operations, dependent on more complex assemblages. As a result, tactical media and tactical cartography are limited in applicability. Taking a conciliatory tone, I consider Kluitenberg's (2011) efforts to 'hybridize' each concept to account of the mass street mobilizations that have utilized the power of social media platforms and mobile devices since 2010.

Secondly, 'autonomous cartography' (Counter-Cartographies Collective et al. 2012) shifts concerns away from tactics towards organizational forms. As Nunes (2014, 10) argues, broader socio-political shifts in labour provision and ways of doing activism have brought-into-being a 'mode…that can be described in its own right' without recourse to state practices or traditional labour formations such as trade unions. This autonomy, therefore, concerns a separation of organizational, epistemological and political power from established forms. Autonomous cartography, I argue, is deployed as a tool or a method to advance the aims of activist groups comprised of individuals with complimentary, overlapping concerns. Ordinarily the cartographic process is used to make visible socio-political connections or flows that may not be evident; such as the fluidity of nation-state borders, the precarity of workers, or the abstractions of capital. This 'autonomous' ethic is shared by student groups in the UK who have engaged in disruptive practices during protest events.

Finally, I explore the concept of 'radical cartography' (Denil 2011) in order to appraise the definition of 'radicality' and its possible applicability to the case study. As Denil (2011, 8) suggests, radicality concerns both a Romantic ideal centred on innovation and experimentation, as well as a 'pragmatic directness'. The Sukey platform, I argue, satisfies both these criteria. Nonetheless, Denil's model is limited only to cartographic form, with his search for a radical cartography ignorant of radical cartographic *practice*. It is necessary therefore to distinguish the difference between, and possibility of, radical cartographic form *and* practice.

None of these activist conceptualizations consider the tactical, autonomous or radical nature of digital navigation. Moreover, none take account of the relation between disruption, manoeuvres, risk and navigational knowledges exercised, captured, circulated and acted upon during protest events. This is why it is necessary to compose an entirely new term to explain such phenomena.

Disruption

'The theory of disruption is meant to be predictive.'

(Lepore 2014, n.p.)

'Disruption' refers to the nature of cartographic practice during the production and use of a digital map in any array of instances. It does not refer to the disruption of the map as form nor thing – although these aspects certainly play their part in exercising the disruptive tendencies of the cartographic effort. This is in contra-distinction to Denil's (2011) radical cartography which demands a trans-*form*-ation of the map itself, but not any attendant cartographic practice afforded, mediated or generated by the map. That is not to say, however, that the digital mapping platform that forms the focus of the critique here is not radical, according to Denil's definition. It will be shown that it satisfies the criteria for such, as outlined above.

As discussed in the previous chapter 'disruption' is a particularly charged term for all parties involved in the kind of UK political activism considered here. It is the term against which policing measures and actions are judged during public order situations. It is the police's duty to evaluate the effect of any protest on local communities. If it is found that it may indeed cause '*serious* disruption' (Public Order Act 1986, 8, emphasis added) a senior officer responsible for coordinating the public order situation may move to impose conditions on it. For autonomous activists 'disruption' is the key dynamic to be executed during such actions. Disruption, then, is a sacred force at the heart of any and all protest. Much of the disillusionment with mass protest marches has been focused on their inability to disrupt everyday life as a result of their routed, pre-ordained and pre-agreed nature.

However, more recently, 'disruption' has come to denote '*economically* disruptive technologies' that have the potential to 'transform the way we live and work, enable new business models, and provide an opening for new players to upset the established order' (McKinsey Global Institute 2013, n.p.). It entails what Joseph Bower and Clayton Christensen call 'catching the wave' (Bower and Christensen 1995, 43). Examples offered up by the McKinsey Global Institute (2013, n.p.) include 'the semiconductor microchip, the Internet, or steam power in the Industrial Revolution'.

In a contemporary mould, as Jill Leopore suggests, '[t]hings you own or use that are now considered to be the product of disruptive innovation include your smartphone and many of its apps, which have disrupted businesses from travel agencies and record stores to mapmaking and taxi dispatch' (Leopore 2014, n.p.). In order to refine the current debate around disruption and innovation, Clayton Christensen et al. (2015, 46) re-state that '"[d]isruption" describes a process whereby a smaller company with fewer resources is able to successfully challenge established incumbent businesses'. In the McKinsey report they identify twelve 'potentially economically disruptive technologies' (McKinsey Global Institute 2013, 4) that possess the characteristics to

‘drive economic impact and disruption by 2025’ (McKinsey Global Institute 2013, 2) including cloud technology, advanced robotics and autonomous vehicles.

According to McKinsey, disruptive technologies have to satisfy four criteria. Firstly, they must ‘drive accelerated rates of change or discontinuous capability improvements’ (McKinsey Global Institute 2013, 2). Secondly, they must demonstrate a ‘broad reach’ in regards to the ‘potential scope of impact’ (McKinsey Global Institute 2013, 3). Thirdly, they must have the ‘potential to create massive economic impact’ in regards to ‘profit pools’, GDP figures and capital investments (McKinsey Global Institute 2013, 3). Then finally, they must ‘have the potential to dramatically change the status quo’ by transforming ‘how people live and work’ or ‘shift surplus for businesses’ (McKinsey Global Institute 2013, 3) amongst other radical changes.

It is within this framework that one might be tempted to situate a cartographic form of disruption. As Lepore argues:

> the rhetoric of disruption—a language of panic, fear, asymmetry, and disorder—calls on the rhetoric of another kind of conflict, in which an upstart refuses to play by the established rules of engagement, and blows things up…Think of it this way: the *Times* is a nation-state; BuzzFeed is stateless. Disruptive innovation is competitive strategy for an age seized by terror.’ (Lepore 2014, n.p., original emphasis)

However, the difference between ‘economically disruptive’ technologies and cartographically disruptive technologies is that whilst one offers to disrupt in the name of a continuation of forms of capital extraction and accumulation, the other works to suspend or deny it. In other words; to undermine and provide a degree of contingency (and thus, insecurity) that threatens the otherwise smooth workings of capital. Whilst economically disruptive technologies may equally regard existing markets and capital accumulation processes as undesirable, only the former desire to overcome such with more capital accumulation. Whilst one works to ensure capital(ism)

continues in its ever-creative, yet ever-destructive (socially, geographically) form, the other works to disrupt it through urban, protest event scenarios.

The ridesharing platform Uber is emblematic of how digital technologies work to undo the state and its forms, relations and process. This 'undoing' is not dissimilar to the work of disruptive cartographic projects such as Sukey which forms the case evidence in this thesis. How Uber and Sukey differ lies in their attention to particular kinds of state processes. Whilst Uber indirectly re-configures state-funded public and private transportation from buses to taxis, activist platforms directly target state institutions such as the police. They activate the power of the crowd in order to disrupt the 'settings given by capital and the state' (Dean 2016, 11). Thus, each distrusts the state – but for different reasons. One sees the state as a bureaucratic entity stifling market relations, whilst the other sees the state as a violent institution suppressing citizens' capacity to exercise their democratic rights – in favour of elite, capital interests.

What is critical to remember, therefore, is that disruption is not the preserve of radical left activism. On an international scale the power of disruptive technologies is, and continues to be, harnessed for capital accumulation, albeit thanks to a libertarian impulse. Whilst easily labelled as a neoliberal practice – consistent with neoliberal desires to dismantle state apparatus' – identifying its more radical libertarian force, allows one to explore possible relations (and contradictions) between economically disruptive technologies and disruptive cartographies.

Tactics

'A tactic depends on time – it is always on the watch for opportunities that must be seized "on the wing." Whatever it wins, it does not keep.'

(de Certeau 1984, xix)

As will become clear, disruptive cartography depends on so-called 'strategic' entities. Moreover, disruptive cartographic projects depend on communicational logistics. As such, any disruptive cartography is also dependent on particular organizational forms and attendant digital infrastructure. Disruptive cartographies cannot, therefore, be considered horizontally momentary, but *vertically* so. Every 'mapping moment' (Dodge et al. 2009, 234) is shot through with other 'strategic' and 'logistical' elements. A failure of these strategic and logistical elements may, therefore, bring about the failure of a 'tactical' action. As such, the difference between so-called strategic actors (the state or police) and tactical actors (protesters) is based on the generative tendency of the mapping assemblage in question, rather than an *a priori* temporal capacity.

In *The Practice of Everyday Life*, Michel de Certeau makes a distinction between two kinds of actions: strategies and tactics. The first of these he defines as: '[t]he calculus of force-relationships which becomes possible when a subject of will and power (a proprietor, an enterprise, a city, a scientific institution) can be isolated from an "environment."' (de Certeau 1984, xix). The other, he suggests, is: '[a] calculus which cannot count on a "proper" (a spatial or institutional localization), nor thus on a borderline distinguishing the other as a visible totality.' (de Certeau 1984, xix).

Strategies, as de Certeau suggests, are made possible by institutions of various kinds, but limited to those, more generally, with some form of capital. In turn, it is this capital that is operationalized through some kind of institutional investment and 'proper' placing, thus allowing it to generate an 'inside/outside' relationship to others. This is, put simply, a definition of any particular modern organization, and a description of the type of power it demonstrably wields.

However:

> A tactic insinuates itself into the other's place, fragmentarily, without taking it over in its entirety, without being able to keep it at a distance. It has at its disposal no base where it

> can capitalize on its advantages, prepare its expansions, and secure independence with respect to circumstances. The "proper" is a victory of space over time. On the contrary, because it does not have a place, a tactic depends on time – it is always on the watch for opportunities that must be seized "on the wing." Whatever it wins, it does not keep. It must constantly manipulate events in order to turn them into "opportunities." The weak must continually turn to their own ends forces alien to them. (de Certeau 1984, xix)

If we crystallize de Certeau's tactical mode of operation, we can conclude that it consists of the following characteristics. Firstly, a tactic works across an opposing, presumably strategic, territory. A tactic, therefore, must work across terrain that is not of its own choosing. Secondly, a tactic works 'fragmentarily' with neither the effort nor ability to *act* in totality and to *take* totally: a tactical mode of operation functions on piecemeal terms by necessity – it cannot 'take over' a strategic entity as a whole in order to *prevent* its functioning, or apprehend it to *replace* its functioning. Further, it must operate in a de-centralized fashion. As de Certeau suggests, 'it has at its disposal no base' (1984, xix). Therefore, it must operate in a decentralized fashion. Moreover, it cannot plan ahead and act with future moves in mind. The tactical mode of operation works not to secure space, but to harness time. In so doing, practices that cleave to the tactical mode of operation must use:

> …clever tricks, knowing how to get away with things, "hunter's cunning," maneuvers [sic], polymorphic simulations, joyful discoveries, poetic as well as warlike. The Greeks called these "ways of operating" *mētis*. (de Certeau 1984, xix)

The tactic works not to colonialize space, but to occupy a brief temporal event in order, not to advance any kind of strategic gain, but to make skillful progress. It must do so, however, through many means that are not identified and codified as per strategic modes – it 'must continually turn to their own ends forces alien to them' (de Certeau 1984, xix).

Fragmentary activity, decentralized control and 'of-the-moment' orientation during protest events are a necessary result of the upsurge of extra-institutional forces in the UK. As Nunes (2014, 8) makes clear, the similarities between activist movements around the world include:

> …the distrust of representative politics and representation in general, the shunning of formal organizations and the tendency towards organising in networks, the preference for creative, extra-parliamentary forms of actions, the tactical diversity, and the use of the internet for organising, mobilising, disseminating information, generating affect and garnering support.

Further, a commitment to seizing opportunities 'on the wing' (de Certeau 1984, xix) is characteristic of much of the austerity-era protest action as practiced by autonomous activists. Much of this has involved an ethical eschewal of A-to-B events due to a lack of perceived disruptive possibility, leading to the taking up of various techniques designed to target a multitude of subjects, including, but not limited to, big business and financial institutions. This shift away from the typical A-to-B protest event can be seen, in de Certeauian terms, as 'opportunistic seizures' of forces previously alien to them. In other words, as tactical actions.

However spatial manoeuvres – collective, coordinated and scripted movements generated by activists during student and anti-austerity protests in the UK – are curious 'extra-institutional' (Scott 2012, XVI) or 'organizationless' (Nunes 2014, 9) entities that do not fit neatly into the de Certeauian dualism, emerging neither from strategic nor tactical, nor even logistical positions alone. Instead the tactical, strategic and logisitical bleed into each other. Throughout the rest of the next section the relevant 'tactical' literature will be scrutinized in order to identify particular opportunities for a conceptual expansion in the context of protest mapping.

As David Garcia and Geert Lovink (1997, n.p.) suggest; 'Tactical Media are what happens when the cheap 'do it yourself' media…are exploited by groups and individuals who feel aggrieved by or excluded from the wider culture'. As such, it has become an umbrella term through which a

multitude of people including 'the activist, Nomadic media warriors, the pranxter [sic], the hacker, the street rapper, [and] the camcorder kamikaze' (Garcia and Lovink 1997, n.p.) have been able to gather under. What has brought these otherwise disparate individuals together is an awareness of the value of 'temporary reversals in the flow of power' (Garcia and Lovink 1997, n.p.). In short, and in de Certeauian terms, an appreciation of the power of seizing opportunities 'on the wing' (de Certeau 1984, xix).

'In its most expansive articulation', as Rita Raley (2009, 6, emphasis added) continues, 'tactical media signifies the intervention and *disruption* of a dominant semiotic regime, the temporary creation of a situation in which signs, messages, and narratives are set into play and critical thinking becomes possible'. These two terms – intervention and disruption – are seen consistently throughout the tactical media literature, and imply that tactical activities are temporary and therefore precarious attempts to provoke critical appraisal of semiotic regimes, rather than induce wholesale transformations of socio-material ones. As interventions they seek to meddle, confuse and agitate. As disruptions they orchestrate minor perturbations designed to tamper with smooth temporal flows. These 'dominant…regime[s]' (Raley 2009, 6) are already-always structural, strategic flows. Tactical media projects, therefore, work faithfully to de Certeau's dualism as tactics of the weak. They acknowledge that such work can only do so 'on the fly', whilst lacking the generative power to operate through strategic entities.

But as Wark (2003, n.p.) suggests, tactical media has a deliberate blindness towards another force he calls 'communicational logistics'. Whilst tactical media projects have been, and continue to be successful on their own tactical terms (fragmentary, nomadic, reflexive, responsive, etc.), they have continued to orientate themselves exclusively towards strategic entities. Moreover, Wark (2003, n.p.) posits them as monolithic, with tactical interventions appealing only as 'a way of getting into the cracks' and he suggests it is increasingly necessary to attend to this logistical power.

Eric Kluitenberg (2011, 7) attempts to re-visit some of these cornerstone issues of tactical media in light of the 'resurgence of social protest in an era of ubiquitous media'. In short, the ferment of 2010 and 2011 has led to the need to re-appraise the conceptual coordinates of tactical media, not least because of the growing ubiquity of new social media platforms and mobile devices. This resurgence is extrinsically linked to mass manoeuvres taking place in public space during such occupations. In order to make sense of this shift, Kluitenberg gestures towards the term 'hybrid space' to describe the embedded but transgressive nature of technologically-mediated political actions in public places such as squares and parks:

> Hybrid Space is discontinuous and volatile, always varying in density or 'thickness'. The expansion of wireless transmission protocols and wireless network technologies have greatly added to the density, thickness and complexity of hybrid space. In the most literal sense the media have moved into the streets and, although extremely recent, this phenomenon is already accepted as a vernacular of contemporary life. (Kluitenberg 2011, 11)

Whilst in Kluitenberg's new interpretation the tactical and the strategic are enmeshed, it is nonetheless the tactical that still assumes conceptual primacy in this operation. In short, the tactical is still assumed to be able to interject, intervene and inter-act with the strategic. Further 'possible trajectories' (Kluitenberg 2011, 49) that Kluitenberg speculatively identifies for tactical media are worth evaluating in detail here since they explicitly gesture towards tactical cartography. More generally, he is keen to further operationalize the ever-spatial characteristics of tactical media. For example, he suggests that recent occupations of public spaces have been 'permeated by electronically mediated flows' that have 'both construct[ed] and capture[d] them' (Kluitenberg 2011, 50). Their hybrid nature suggest the concept of tactical media has been able to live on through a new, networked mode of existence. The encampment provides a perfect empirically-verifiable case for such, with protesters simultaneously occupying 'physical' space ('in'

tents, 'in' squares, and 'in' cities) whilst coordinating action via social media platforms and through mobile means.

Visibility is the other of the main noted trajectories. For this, Kluitenberg details the importance of WikiLeaks' operation 'in the ambiguous terrain of media transparency and untraceable' (Kluitenberg 2011, 51). Yet, he suggests that whilst transformative, WikiLeaks is indicative of a rather problematic shift, as its:

> …insistence on radical transparency invites… [a] complicated problem: in a situation of ubiquitous visibility the traceability of the citizen becomes absolute, and privacy becomes a remnant of the past. With this ultimate demise of the private sphere it is hard to imagine any form of autonomy will still be feasible. (Kluitenberg2011, 52)

In other words, the last five years has seen the rise of the ethics of 'openness'. But in the case of Wikileaks this radical transparency has been predicted, organizationally, on a 'radical *opacity*' that 'has become increasingly untenable' (Kluitenberg 2011, 51, emphasis added) as efforts to undermine their activity have intensified.

There are two points to be made in light of Kluitenberg's work. Firstly, that occupations and encampments are fluid forms entailing a process of occupy-ing and encamp-ing. As I suggested in the previous chapter, occupations generate temporary spaces of habitation and care. But in order to avoid fetishizing their form, they must be considered as one protest manoeuvre amongst many, all oriented in some sense towards disruption. Secondly, that the problem of 'radical opacity' identified by Kluitenberg is not limited to just Wikileaks. In the conclusion of this thesis I draw attention to failures of the Sukey platform to encourage public participation whilst ensuring the safety and – if necessary – anonymity of its activist collaborators. In the next section I look to how other cartographic conceptualizations have emphasized the critical feature of this dynamic: autonomy.

Tactical Cartography

Tactical cartography is a tool for political action. In *An Atlas of Radical Cartography* (Mogel and Bhagat 2010) the Institute for Applied Autonomy (IAA) define it as:

> …spatial representations that confront power, promote social justice and are intended to have operational value…"tactical cartography" refers to the creation, distribution, and use of spatial data to intervene in systems of control affecting spatial meaning and practice. Simply put, tactical cartographies aren't just about politics and power; they are political machines that work on power relations. (Institute for Applied Autonomy 2010, 29–30)

Mogel and Bhaget's more expansive commitment to systems of control, meaning, practice and power relations insulates tactical cartography against the criticism levelled at tactical media. In other words, suggesting that tactical cartography works across *socio-material* registers rather than simply semiotic ones.

In highlighting their 'operational value' the IAA are gesturing towards tactical cartography as a *method*, rather than as a rhetorical or purely symbolic device 'standing in for' or representing political action. Again, the IAA also deploy the term 'intervene' in reference to the force, scope and direction of such cartographic work. Much like other tactical media projects, tactical cartographic ones have historically involved a brand of interventionist political action seeking to work in between strategic cracks by 'exposing' and visualizing existing power relations, notably of the socio-spatial kind.

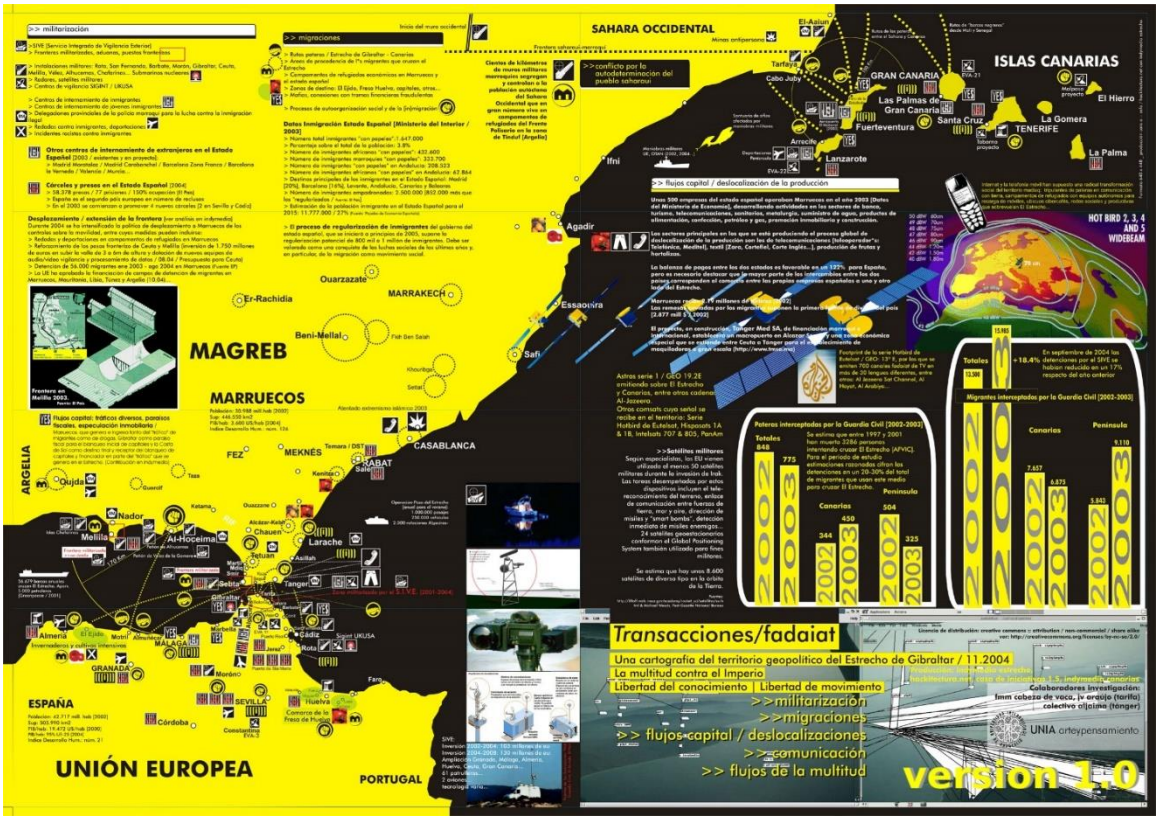
Mapping projects undertaken by the Counter-Cartographies Collective (3Cs) have aimed to 'construct new imaginaries of collective struggle and alternative worlds' (Counter-Cartographies Collective 2015, n.p.), by tracing the linkages between otherwise disparate economic and social elements, and to situate socio-spatial relations of entities such as HE establishments. It is precisely

these articulations that tactical cartographic projects have been able to engineer; and these interests continue to form the backbone of student activism both in the US and the UK. Such efforts help to provide a practice of disorientation, enabling the connection of the 'abstractions of capital to the sense-data of everyday perception' (Toscano and Kinkle 2015, 7) for those studying and working in HE establishments. These tactical maps aid in this (dis)orientation.

Moreover, these efforts have spawned a variety of publications that have sought to draw connections between their own active research and other such collectives like *Colectivo Situaciones*, *Precarias a la Deriva* (Precarious Women Adrift) and Hackitectura (see; Cobarrubias 2009, Cobarrubias and Pickles 2009, Counter-Cartographies Collective et al. 2012). As such, the 3Cs can be seen as both practicing and collectively writing about tactical cartography. Aesthetically, they share a preoccupation with Deleuzo-Latourian conceptions of geopolitical space, emphasizing the connected, intertwined, nodal, fluid nature of contemporary capitalism. For example, Cobarrubias and Pickles' reading of Hackitectura's *Cartographies of the Geopolitical Territory of the Straits of Gibraltar* (2004) map, emphasize that:

> Instead of accepting the border as a fixed entity that separate[s] an "us" from a "them," constraining bodies and movement, the groups involved are mapping the complex networks of flows that make up this "border" region…To these they have added new interaction space, such as those created by communication technologies that span and connect the region of the straits and facilitate even tighter networks of contact and coordination on both sides. The result is a map that does not reproduce the border as a space of separation but follows the flows across the Mediterranean in order to articulate the border as a space that is created, inhabited and traversed. (Cobarrubias and Pickles 2009, 51–52)

As such, Hackitectura's mapping ethics align with Kluitenberg's (2011, 49) suggestion that tactical media operators desire to navigate 'the hybrid realities in which they find themselves immersed'.



Map 3.1 | Hackitectura *Cartographies of the Geopolitical Territory of the Straits of Gibraltar* (2004)

As these examples illustrate, the separation between tactical cartography as a kind of metaphorical, analytical approach and tactical cartography as a geographical, actual pursuit is difficult to maintain, even though there may still be 'profound differences between those who research mapping as a practical form of applied knowledge, and those who seek to critique the map and the mapping process' (Perkins 2003, 341). Sometimes this has entailed using tactical cartography as a symbol for analytical work that 'renders economic and political complexity' (Raley 2009, 2) in a more legible form – as Jameson's (1995) 'cognitive mapping' approach demands – whilst sometimes using it as a literal term for explicitly cartographic projects that visualize territorial, geopolitical entities, and capital flows across space. In any case, it has denoted tactical efforts designed to challenge dominant strategic and, at times, *logistical* power relations.

Yet, much like the broader genre of tactical media, tactical cartography has some conceptual limitations which need addressing here. The most pressing of these concerns, once again, is the tactical-strategic divide, this time with three slightly different articulations.

Firstly, whilst tactical media, as per Wark's (2003) criticism, has failed to even consider logistical forms of power, tactical cartography has been rather more attentive to this dimension. The Hackitectura map does nothing *but* trace logistical forms of power such as communications, capital and security flows that nominally extend through and beyond strategic, territorial entities. The 3Cs' Disorientation guides follow all manner of HE flows that transcend national boundaries. Whilst such efforts may still be considered tactical interventions of the de Certeauian kind, they do not position themselves antagonistically towards organizational forms, but *flows between such*. This is an important distinction, and one that escapes Wark's criticism of tactical media. Territorial metaphors, also still useful to a degree, are blunted by this material shift towards socio-economic flows and digital networks. De Certeau's suggestion that tactical endeavours emerge from de-centralized positions amounts to nothing if 'strategic' entities are entirely capable of possessing and exercising that ability too. Moreover, emphasizing the power of delineated territories over the flow *between*, *around* and *into* such, belies the constitution of contemporary life as it is.

Secondly, although the term 'tactical cartography' is widely used in order to situate such work within a tactical media framing, there are a number of corollary terms for such practices. 'Counter-mapping' (Peluso 1995, Wood 2010) and 'counter-cartography' (Counter-Cartographies Collective 2015) are perhaps the most commonly used, with 'autonomous cartography' (Counter-Cartographies Collective et al. 2012) and 'radical cartography' (Mogel and Bhagat 2010, Denil 2011) also prevalent. Rhiannon Firth's (2014) attempts to chart an 'anarchist pedagogy' in relation to these earlier efforts shows a continuing desire to, in some way, comprehend and critique progressive kinds of cartographic theory, methodology and practice.

Each definition draws on a specific operational term. Tactical cartography demands an 'intervention' into 'systems of power and control' (Institute for Applied Autonomy 2010, 29). Counter-mapping is concerned with an 'appropriation' (Peluso 1995, 384) of state tools and

techniques (i.e. maps) to predominantly fight territorial and resource claims. Counter-cartography, however, is preoccupied with 'destabilizing' current representations and imaginaries (Counter-Cartographies Collective 2015, n.p.). Autonomous cartography, as also proposed by the Counter-Cartographies Collective et al. (2012, 444), promotes 'self-organization' through militant cartographic means. Radical cartography, as imagined by Mogel and Bhagat (2010, 6), is a process of 'subverting' conventional framings for social progress, whereas radical cartography, as defined by Denil (2011, 20), must 'disrupt' existing cartographic schemas.

Mapping Practice	Definition	Operational Terms	References	Key theorists	Practitioners
Tactical cartography	The creation, distribution, and use of spatial data to intervene in systems of control affecting spatial meaning and practice	Intervention	Institute for Applied Autonomy (2010)	de Certeau, Wark, Lovink	IAA, Surveillance Camera Players, Bureau D'Etudes
Radical cartography I	The practice of mapmaking that subverts conventional notions in order to actively promote social change	Subversion	Mogel and Bhagat (2010)	Jameson, Toscano and Kinkle	Unnayan, Center for Urban Pedagogy, Pedro Lasch, Trevor Paglen, Elin O'Hara Slavick, An Architektur
Radical cartography II	Any document/object that satisfies 'mapicity' whilst disrupting pre-existing cartographic schema	Disruption	Denil (2011)	Gombrich, Berger, Fry	Cubists, Situationists
Counter-mapping	The appropriation of the state's techniques and manner of representation to bolster the legitimacy of resource claims	Appropriation	Peluso (1995), Wood, Fels and Krygier (2010)	Peluso, Harley, Edney, Wood	Indigenous groups, community organizations
Counter-cartography	The rendering of new images, destabilization of current representations and construction of new imaginaries	Destabilization	Counter-Cartographies Collective (2015)	Pickles, Elwood, Bunge	3Cs, Detroit Geographical Expedition and Institute
Autonomous cartography	The creation of new geographic knowledges through critical, militant organization	Autonomy	Counter-Cartographies Collective et al. (2012)	Deleuze, Hardt, Negri, Lazzarato	3Cs, *Colectivo Situaciones*, *Precarias a la Deriva*, Hackitectura
Vernacular mapping	Non-statist, extra-institutional, participatory, cartographic practices taken as techniques of addition	Addition	Gerlach (2010, 2014, 2015)	Deleuze, Guattari, Ingold	OpenStreetMappers
Disruptive cartographies	The capture, verification and rendering of navigational data for the purposes of radical, autonomous practice	Disruption	Hind (2015a)	Deleuze, November, Amoore	Sukey

Table 3.1 | A Typology of Critical Cartographies. Source: compiled from various.

Whilst the intention is not to critique all of these various strands of critical cartography, it is necessary to draw attention to the two 'counter-' types (counter-mapping, counter-cartography),

because, like tactical cartography, they gesture towards an antagonism with strategic forms of power. Although, counter-mapping – in Peluso's (1995) original text – is more concerned with techniques of recognition and appropriation rather than intervention or destabilization, *per se*. Still, there seems to be considerable overlap between tactical mapping and counter-cartography, with each attempting to incorporate logistic forms of power into such methods.

Thirdly, tactical cartography is still wedded to a temporal framing that posits tactical action as anchorless and 'of the moment'. As a result, tactical cartographic work is rendered fleeting; without acknowledgement of the material, infra- and inter-structural requirements to be so. Indeed, this kind of 'off the cuff' mapping completely belies the complex strategic underpinnings of many tactical cartographic works. What is perhaps most impoverished in this conceptualization is that most, if not all of these tactical cartographic endeavours have been executed by, through and oriented towards, the digital. It is this disavowal of the digital assemblage that allows such tactical actions to occur that forces an expansion of the tactical media/cartographic framing.

Whilst tactical cartography has a critical lineage and an analytical purchase on features of contemporary life that need to be acknowledged, there are elements to the Sukey platform that escape it. Further, both counter-mapping and counter-cartography fall into similar binary traps as tactical cartography, relying on the pre-existence of another organizational force for its own conceptual strength, as Joe Gerlach (2010) suggests. A thoroughly *disruptive* cartography works across semiotic and socio-material registers, disobeys a strict temporal framework, jettisons any particular organizational arrangement, is embedded in mass movements rather than artistic intervention, dissolves the otherwise false distinction between offline and online activism and enrols 'ordinary' activists in such a cartographic entanglement. The Counter-Cartographies Collective et al.'s (2012) 'autonomous cartography' and Mark Denil's (2011) 'radical cartography', however, furnish these qualities. They will be attended to in the next two sections.

Autonomous Cartography

Disruptive cartographic projects are autonomous. They do not 'appropriate' or 'ape' state techniques in any way to do battle on the same terrain as in counter-mapping. The Counter-Cartographies Collective et al. (2012) elucidate a number of autonomous mapping projects wholly independent from state-strategic entities, quite visibility demonstrating alternative socio-spatial trajectories that whilst nominally might challenge the state in various ways, does so from an independent epistemological base. For example, *Precarias a la Deriva*'s use of the Situationist drift (*dérive*) is a unique method through which the 'spatial practices of precarious workers' (Counter-Cartographies Collective et al. 2012, 447) can be explored. Moreover, as they continue:

> This innovative research-intervention methodology allows the women of Precarias a la Deriva to experiment with alternative [autonomous] forms of political organization outside traditional political parties and trade union structures. Through the drifts, the Precarias not only investigate their situations, they also enact new, lived spaces of everyday life and create new practices and networks of resistance. (Counter-Cartographies Collective et al. 2012, 447)

What is crucial, here, is the political articulation of such efforts as necessarily outside of both strategic organizational structures, and other antagonistic formations such as traditional political parties and trade unions. For instance, what links the women of *Precarias a la Deriva* is not that they work in the same industry, nor even in the same workplace, but they are defined by, and connected in, their precarious status otherwise ignored by formal trade union regulations. Throughout industrial capitalism labour affiliation (occupation, profession, etc.) and political issues (wages, rights, etc.) have been one and the same. In a post-industrial age the latter transcend labour affiliation, finding solidarity in thematic-relational, rather than occupationally-determinable interests. As the Counter-Cartographies Collective et al. ask:

> How could temp[orary] workers, the self-employed, workers on per-hour contracts, and domestic workers (to name but a few) strike? Who would even notice? These questions…highlight the conditions and experiences of precarious works in the current economy. (Counter-Cartographies Collective et al. 2012, 446)

With increasing numbers in these labour categories, autonomous projects and collectives of various shades are now familiar across Europe. Building on Counter-Cartographies Collective et al.'s (2012) insights into the practitioners and subjects of autonomous cartography is therefore incredibly important. No other framework is able to comprehend these extra-institutional political affiliations, energies and articulations.

Joe Gerlach's (2010; 2014; 2015) concept of 'vernacular mapping' compliments this reading of autonomous cartography, by equally drawing on these extra-institutional qualities. As he says, vernacular mappings are:

> …non-statist…participatory, cartographic practices, either digital or analogue in their composition, in which such performances are not taken to be technologies of capture, but as techniques of *addition*; of adding more to the world through abstraction; of adding to the riskiness of cartographic politics by proliferating yet more renders of the world. (Gerlach 2014, 23, original emphasis)

Whilst Gerlach does not gesture to how these non-statist mappings relate to the state, they nonetheless exist outside of it. He delicately qualifies this by suggesting that vernacular mappings are also 'extra-institutional' (Gerlach 2014, 23). The two are not the same, of course, if one does not equate the state solely with institutions. What Gerlach is intending to draw attention to here is the way in which mapping projects have, in recent times, emerged outside of traditional organizational forms – both statist and extra-statist. Neither state mapping departments (UK Ordnance Survey, etc.) nor formal institutions (businesses, philanthropic organizations, cultural

societies, universities, etc.) have led a mapping revolution, but loose, informal and voluntary collectives. As Gerlach suggests:

> Virtual and actual mapping collectives such as OpenStreetMap present serious challenges to the theory and profession of cartography. Those who spend their spare time walking around and reorienting the globe with GPS devices in hand, or pouring over code from the comfort of their armchairs, are not necessarily trained in formal cartography, and, moreover, there is no obvious motive for how and why OpenStreetMappers map. (Gerlach 2010, 165)

Statist and institutional arrangements do not allow for these twin freedoms – of mapping in 'spare time' or 'pouring over code from the comfort of…armchairs'. This voluntary dimension is therefore central to Gerlach's definition of vernacular mapping – even if it is only offered implicitly by Gerlach in his work on OSM as a collaborative, 'crowd-sourced' mapping enterprise. Nevertheless, it is synonymous with being non-statist and extra-institutional.

Vernacular mapping, it is said by Gerlach, 'espouses a politics of the aesthetic whereby creative potential is valorized as a series of political interventions, but not necessarily in a subversive or angst-ridden manner' (Gerlach 2010, 166). In this crude characterization any other political intervention aside from the vernacular and voluntary is deemed 'subversive' and 'angst-ridden'. Yet being *compelled* to map – rather than simply volunteering to do so – should not be conflated with mere subversion nor angst. In so doing, Gerlach excludes a large range of cartographic projects that nonetheless share a plethora of similarities; organizationally, materially and ethically to the vernacular mapping projects he identifies. This unnecessary division between voluntary and compelling enterprises is the shortfall of the vernacular mapping framework.

Radical Cartography

Disruptive cartography is radical in practice. Mark Denil (2011) unpacks what 'radicality' in a cartographic sense might entail. He identifies two possible lineages: Romanticism and pragmatism. On the one side he suggests that:

> There is an unmistakable appeal to a term like *radical*: there is something in it that speaks to the Romanticist spirit embedded in Western culture since the 1800s. The word conjures up visions of a Zapata, or of a Ché; of a Wilde in his cell; a Byron swimming the Hellespont; or a Marx in his garret. The attraction of these visions hinges on the concept of the *sublime*, a pivotal quality in 18th and 19th Century philosophers and aesthetics. The sublime counterbalanced the classic concept of beauty with a powerful experience of the uncontrollable, the dark, the dangerous, and the (possibly) threatening. (Denil 2011, 8, original emphasis)

In this, radicality is directly related to a kind of avant-gardism – an innovative or experimental way of operating. A radical cartography in this sense, then, would demand innovative techniques or an experimental aesthetic. Yet as Denil (2011, 8, original emphasis) continues, there is also a 'suggestion of hard-headed "realism" and pragmatic directness implied by the term *radical*', a case of 'getting things done'. In this definition radicality concerns the deliberate forgetting of social norm and etiquette that form established ways of doing things. A radical cartography in this sense, then, would entail an almost revolutionary re-setting of the established ways of both producing *and* using maps.

Although Denil (2011, 9) suggests there is an 'ambiguity' to radicality as a result of this Romanticist/pragmatist distinction this is actually far from the case. Both emerge from the same dissatisfaction with pre-existing socio-cultural norms, and consequently, gestures towards a desire to think and then act differently. They are ultimately one and the same utopian project. A radical cartography, therefore, involves *both* an innovative way of thinking/doing cartography *and*

a more instrumental, articulated desire to actually deliver such a project. In a sense, then, it is both extensive – in the ways it searches far and wide for new ideas, concepts and forms – and intensive – in the way it works in and on itself to formulate novel, applicable methodological trajectories.

Denil is also concerned with defining the essence of the map. He concedes that 'no universal criteria exists for determination [sic] of map-hood' (Denil 2011, 10) and that '[t]here has been and is a tremendous multiplicity of things that can, will, have been, and might be, identified and used as maps' (Denil 2011, 9). 'We know a map when we see one' (Denil 2011, 9) may yet be the most accurate definition however elusive and subjective it may seem. Nonetheless, Denil perseveres and suggests that:

> In order for a category of "things that are maps" to exist, there must be some essence or characteristic that allows that state of being a map to be recognized and made operative. For convenience we might think of this essence or characteristic as *mapicity*. (Denil 2011, 10, original emphasis)

For this essence or characteristic to be made operative, Denil further suggests that '[t]he criteria of usefulness, usability, and believability' (Denil 2011, 11) are appropriate tests to define a map's mapicity, but admits that this is rarely applied in the necessary wholesale manner to any and every object encountered. Nonetheless being able to recognize what is and isn't a map involves a definite degree of literacy – a gaining of knowledge on the intricacies of cartographic design, form, content and practice. It is only through a 'schema' of mapicity – that is, an appropriate interpretive template – that a map can properly be understood.

In conclusion, 'a truly radical cartography would be one where the accepted schema of mapicity, or significant parts of it, is broken down and replaced' (Denil 2011, 15). With this working definition (even, methodology) in hand it is possible to evaluate all manner of supposedly 'radical' 'critical' or 'alternative' maps as Denil proceeds to do. Nonetheless there are faults. Denil is

immune to discussing mapping practice. Here, there is a split: between radical maps and *maps for radical practice*. Whilst the map in Denil's definition is, by requirement, mandated to shatter pre-existing cartographic schemas (although not so much that the now-old one disappears completely), the map in this speculative new definition can acceptably perform within pre-existing schemas so long as they work towards fostering radical *practice*. Radical mapping practices are therefore practices that perhaps do the above, i.e that they connote a 'major paradigmatic shift' involving a 'new vocabulary, grammar, and syntax' for such practices, whilst being both Romantic and pragmatic in nature (i.e. utopian).

Whilst nominally radical *practices*, disruptive cartographies do not necessarily hold true to Denil's (2011: 15) rather high demand that their *form* involve a 'leap to a new schema'. Nonetheless I argue that the Sukey platform employed a playful aesthetic notably radical in the way it was deployed in various promotional and cartographic material connected to the project. The conceptual basis for this aesthetic discussion will be explored in the following chapter. However, it is not the map itself that needs to be considered radical in this instance. Ultimately, the concern lies with radical cartographic practice. Throughout, this practice will be seen as both an interactive (with the map itself) and a generative force (with the world).

Between the 'tactical cartography' of the IAA (2010), the 'autonomous cartography' of the Counter-Cartographies Collective et al. (2012), the 'vernacular mapping' of Gerlach (2014) and the 'radical cartography' of Denil (2011) there are the roots of a new, necessarily conjunctive kind of critical cartography. Devising a wholly new term is therefore necessary. However, one must also pay respect to its corollaries and antecedents; to *tactical cartography* for its emphasis on intervention and disruption, to *autonomous cartography* for its interest in extra-institutional bodies, and *radical cartography* for its focus on pragmatic Utopianism.

Conclusion

In this chapter I have sought to establish a new term: disruptive cartographies. I have done so through a systematic diagnosis of three particular antecedent terms: tactical cartography, autonomous cartography and radical cartography. The first of these has been squarely focused on practice; the second has been centred on organizational composition; and the third has paid attention mostly to cartographic form. Yet for various reasons none of these are perfectly applicable to the case in question – of a digital mapping platform deployed for activist purposes. Tactical cartography has focused too much on the momentary nature of such action. Autonomous cartography has been defined only in relation to a pre-existing power as a 'counter-' action, and radical cartography has ignored cartographic practice. Yet in each are the seeds of a new combinatory cartographic project: disruptive cartography.

This new term expands on some of the above characteristics of each to form a cartographic prognosis. If tactical cartography is brought back into a sympathetic rather than antagonistic relationship with strategic and logistical forces and infrastructures, it becomes rather more applicable to the Sukey platform; operating as a digital mapping *assemblage*. If autonomous cartography is rescued from its restrictive framing as a counter-action and placed more appropriately within the wider autonomous literature as an action organizationally-derived from an extra-institutional milieu, then it becomes easier to identify the proponents, and mediators, of protest manoeuvres. If radical cartography expands its definition to include not only radical form but also radical *practice* it can connect up with broader non-representational theories (see; Thrift 2008, Anderson and Harrison 2012) that posit that the latter rather than the former comprise the centre of geographic knowledge and meaning.

Moreover, disruptive cartographies are navigational. Tactical cartography is an analytical tool rather than a 'calculative device' (Amoore and Piotukh 2016, 2) through which navigational decisions are made. Autonomous cartography is, similarly, a method through which interventions

are made into socio-political order. Radical cartography entails a consideration of cartographic form and aesthetic. None concern the act of navigation. Only vernacular mapping gestures towards it. Disruptive cartography, however, is a thoroughly navigational practice designed to affect the capture, circulation and use of navigational knowledge in protest events. Whilst all political, none of these frames are equipped to deal with digital mapping practices as performed through mobile devices during demonstrations, or to understand how such devices 'affect our capacity to decide and act' (Amoore and Piotukh 2016, 2) in the world.

Further, none of these frames emphasize the disruptive force of the Sukey platform. Whilst it may be 'tactical', 'autonomous' and 'radical', I argue that it more acutely mobilizes the art and practice of *disruption* as it is politically, spatially and legally defined. Without it there is no cartographic project. As suggested above, disruptive cartography is dependent on and generates an attention towards caring for bodies. In other words, it simultaneously is dependent on the execution of disruptive manoeuvres that *increase* the risk for those involved whilst also *decreasing* the risk for others. In advancing disruption, it also generates attention towards the safety of bodies within the protest space.

These two dynamics: of navigation and risk will be explored in chapter 5. Each is entwined with the other and so demand a more thorough unpacking in order to delve deeper into the nature of disruptive cartography. What follows in the immediate chapter is a taking-up of the aesthetic question posed by Denil (2011) regarding cartographic form, as well as those offered by Kluitenberg (2011) in relation to hybridity.

Chapter 4 | Interface

The digital interface has ushered a novel perceptive capacity into the world. This is what Andersen and Pold (2011, 9) refer to as the 'interface aesthetic'. Although it is traceable back to the birth of the personal computer and the launch of the original Apple Macintosh (see; Manovich 2001), a number of parallel and subsequent developments have led to the rise, consolidation and re-emergence of particular interface aesthetics that do not subscribe to slick, modern(ist) fantasies.

Instead, the crude 8-bit 'pixelated graphics' of early videogames are an equally integral element of this digital interface aesthetic. In recent times they have been re-purposed; emblematic of a fiercely independent imaginary often operating in direct conflict with major hardware developers such as Apple and Microsoft. At once a result of technical limitations of both computer and interface, and a stylistic expression of a counter-cultural world, the pixelated graphic remains a key driver of a particular kind of interface aesthetic today.

In this chapter I suggest that the digital interface must be considered as material object, mediator *and* effect (Galloway 2012, Hookway 2014, Lammes Forthcoming). An interface is not strictly a computer component, but a boundary or threshold, a mediator between two states, as well as an object itself. More specifically in relation to digital technology, the term can refer simultaneously to a specific part or area of an object (screen to mobile device), a series of objects working in relation (application to operating system) to one another *and* a process or inter-action (stroke, tap, double-tap). There is at once both a visual ordering of phenomena and a relation between phenomena and other objects – literally an inter-facing.

In digital mapping terms the strokes, taps and pinches of the interface ensure that worldly phenomena are brought to the fingertips. This is what Sybille Lammes and I call 'double-tap' (Hind and Lammes 2015, 80). It is through interaction with a mobile, capacitive touchscreen that a

greater perceived relation or 'correspondence' (November et al. 2010, 585) is secured between cartographic signposts. This 'navigational interface' (Lammes 2011, 1) ensures that these signposts are aligned and that the user of a mobile device is able to navigate smoothly and efficiently.

Combined with the 'outward' generation of manoeuvres, the 'inward' attention to a digital mapping platform (aesthetically and relationally) forms a multi-oriented action. This, I argue, following Alexander Galloway, yields a 'coherent aesthetic[s]' (2012, 46) whilst exercising an 'incoherent politics' (2012, 47). Whilst the former consists of a 'gradual coalescing around a specific being' (Galloway 2012, 46) such as a digital, mobile interface; the latter 'dissolves existing institutional bonds' (Galloway 2012, 47).

Thus I argue that the Sukey platform was the 'pivot' enabling protesters to navigate during protest events, providing a space through which navigational knowledges could be generated and circulated. It ensured that so-called 'active phenomena' (namely, manoeuvres) in protest events could be rendered cartographically in order to aid disruptive activities. Without the alignment of various cartographic signposts activists would have to seek navigational assurances from elsewhere, unable to engage in the de- and re-territorialization (Deleuze and Guattari 2011) of the urban environment.

Aesthetics

As Soren Pold (2005, n.p.) has suggested 'the interface is now a central aesthetic form conveying digital information of all kinds'. It is through various interfaces that we now comprehend the world, and as Andersen and Pold (2011, 9, original emphasis) further argue '[t]he question of *interface aesthetics* is intrinsically linked to our perception of the interface'. As they continue, however:

> If it is not possible to fully 'unveil' the '*mise en abîme*' of the interface we can…elucidate how interfaces can embed choices, conduct, languages, and ultimately values, worldviews and aesthetics into technical infrastructures. The word aesthetics derives from the Greek '*aisthesis*' that means sense perception, and today we perceive our environment through interfaces' (Andersen and Pold 2011, 9–10)

Thus, the aesthetics of our modern world is derived from and through the interface itself. If digital culture has brought us many ways of sensing this world it is courtesy of the interface:

> Usually understood as a technological artefact optimized for seamless interaction and functionality…the interface also draws upon cultural and artistic traditions, and plays an important role in our culture as art, entertainment, communication, work and business. It is a cultural form with which we understand, act, sense and create our world. (Andersen and Pold 2014, no p.n.)

Yet the interface exists in a triple state. It is at once an object, a mediator and a process – a material element, a conduit and an effect. This much is obvious from looking at the word itself. 'Inter', means between or in relation to, and 'face'; the front or the main focus of an object or body. Together this triple state allows the interface to loop seamlessly and endlessly between the three, creating an ambiguity as to its form, content and purpose.

Yet as a result of these surface-value interpretations there are a number of assumptions about what interfaces are, who or what they involve, and what they actually do. Often we consider an interface to be an object for some kind of exclusive visual purpose. This draws from the second part of the word – face. Faces are the means by which we establish and verify identity. Only through the face may we know exactly who someone, or what something is. As such, the interface is connected to a specific reading of what aesthetics is and entails. In Lev Manovich's (2001) *The Language of New Media*, the interface is shorthand for the Graphical User Interface (GUI) of personal computers. As Manovich suggests, the original Apple Macintosh – released in 1984 –

gave rise to a whole new era in which the 'modernist values of clarity and functionality' (Manovich 2001, 63) in design became of paramount importance. These values were unequivocally visual ones, as Manovich's story attests to:

> The user's screen was ruled by a straight lines and rectangular windows that contained smaller rectangles of individual files arranged in a grid. The computer communicated with the user via rectangular boxes containing clean black type rendered against a white background. Subsequent versions of GUI added colors [sic] and made it possible for users to customize the appearance of many interface elements, thus somewhat diluting the sterility and boldness of the original monochrome 1984 version. Yet its original aesthetic survives in the displays of hand-held communicators such as Palm Pilot, cellular telephones, car navigational systems, and other consumer electronic products that use small LCD displays comparable in quality to the 1984 Macintosh screen. (Manovich 2001, 63)

In this, the Apple Macintosh assumes a primary position in the development of the interface as an aesthetic object comprising of lines, shapes, colours, foregrounds and backgrounds. It is this iconic 'original' aesthetic that Manovich suggests lives on through other subsequent devices such as mobile phones and sat-navs, governing acceptable and attractive design discourse. As such we often think that an interface involves only a two-relationship between human and machine – like a graphical user interface (GUI) – that gives us access to an otherwise undiscoverable world (the computer). However, an interface is more than an object that gives rise to visual possibilities. Interfaces involve other senses such as touch, gesture and proprioception.

Manovich's portrayal of the Apple design aesthetic is a dominant one. Whilst the emergence of the original Apple Macintosh (and further iterations beyond it) have imposed a particular clean, slick, modernist interface aesthetic, I argue that there have been parallel design aesthetics equally as important to consider. '8-bit' is one such alternative tradition.

Jesper Juul, in a short documentary entitled *The Evolution of 8-bit Art* (PBS Digital Studies 2015), contends that 8-bit culture is a combination of both the graphical style of console games developed during the 1980s (such as the Nintendo Entertainment System [NES]), and the DIY ethic of home computers during the same period (such as the Commodore 64). Further, he argues that there are three reasons why the 8-bit aesthetic continues to be so prevalent. Firstly, the ease of creating 8-bit style designs has meant that there is typically a low-barrier to entry. One of the key aesthetic principles of this enduring 8-bit style is that all graphics are pixelated to some extent, so that characters, landscapes, objects, menus and other phenomena are rendered as crude block colours. Of course, during the original 8-bit era this was due to a technical limitation – console and computer games were limited by 8-bits as this comprised the extent of microprocessing power available to developers during the 1980s. In the present day, however, with microprocessing capabilities far beyond a mere 8-bit, this is more an aesthetic choice rather than a result of a technical restriction. Whilst arguably a kind of 'retro revivalism' (Guffey 2006, 162) driven by nostalgia, it nonetheless still possesses 'deeply transformative' potential (Weil 2016, n.p.).

Fig 4.1 | Super Mario Bros. (1983) on the NES. Sources: Playbuzz (2015), New Retro Wave (2015)

Secondly, the counter-cultural, 'independent' nature of 8-bit design lends itself well to various media-artistic projects that might consider themselves to be 'outside of' or 'in opposition to' mainstream design cultures – much like Dadaism, Surrealism and Situationism. As Wood (2010,

199) says of the former two, '[t]his counterculture demanded a counter-map' to which the anonymous designers of *Le monde au temps des Surréalists* obliged. Those involved in Sukey's design, development and deployment have also used their skills in various other alternative projects such as Hurricane Hackers, Occupy London and New York, and the Open Source Ecology initiative – further adding to the 'independent' and autonomous history of the Sukey platform.

Thirdly, the rise of 8-bit culture is the result of the low technical specification required to actually produce pixelated media – whether they be console or PC games, mobile applications, 'chiptune' songs or some other 8-bit influenced project. This, I argue, is a return to a kind of low-tech necessity that gave birth to the original 8-bit aesthetic in the 1980s. As a result, this resurgent graphic style is the cultivation of a DIY ethic resulting initially from a specific technical constraint on a particular kind of media (videogames) that has re-imposed itself on mobile application design. Due to exponentially increasing computer power, mobile smartphones possess the same capacity for interaction and immersion as video and computer games of the 1980s. As such, the constraints of the time have been re-programmed for those developing and designing mobile applications. Yet understanding this DIY aesthetic and ethic is only possible if the interactive capacities of the digital interface are also explored.

Interactions

Interfaces are relational; quite literally inter-faces. As such they are not exclusively aesthetic objects but *performances*. Alexander Galloway's (2012) critique of Manovich rests on the latter's modernist emphasis on the former quality. In this, Galloway suggests that Manovich

> …returns again and again to the formal essence of the medium, the techniques and characteristics of the technology, and then uses these qualities to talk about the new (even if he ends up revealing that it is not as new as we thought it was)…Scattered throughout the book, Manovich advances a number of aesthetic claims that have become

> commonplace parlance in the discourse on digital interfaces, including the idea of a "logic of selection," the importance of compositing, the way in which the database itself is a medium, the emphasis on navigation through space, the reversal of the relationship between syntagm and paradigm, the centrality of games and play, the waning of temporal montage (and the rise of spatial montage), and many other observations. (Galloway 2012, 3)

This is what Galloway later calls an 'emphasis on poetics and pure formalism' (2012, 5) or, in other words, a focus on the strict aesthetic principles of the interface rather than their effects. Galloway also argues that Manovich's emphasis on the poetics of the interface is simultaneously an 'apparent abdication of the political' (Galloway 2012, 7). Whilst a dedication to the former is not necessarily an abandoning of the latter, Galloway suggests this is certainly the case for Manovich, whose aim it was in *The Language of New Media* to establish the key *a priori* aesthetic dimensions of a new type of media. That is, of the interface before the 'injection' of the political in the form of device use.

Yet as Galloway is at pains to argue, the interface is *always* an effect – always a mediation rather than simply a medium. In this Galloway is diametrically opposed to the likes of Manovich, Friedrich Kittler and Marshall McLuhan who favour a 'hermeneutics of media devices' (Galloway 2012, 14) rooted in one particular designation of *techne* as 'substrate and only substrate'(2012, 16). Yet as he continues, *techne* is also 'technique, art, habitus, ethos, or lived practice' involving 'practices of mediation' (Galloway 2012, 16) as well as media. The 8-bit aesthetic is testament to this 'ethos' or 'lived practice'.

It is this mediation that practitioners of Actor-Network Theory (ANT) have also drawn attention to. Sybille Lammes (Forthcoming, 7), for example, contends that the interface should be considered as a 'sign-thing' rather than an effect, *per se*, 'in order to stress the materiality of interfaces as well as their transformable character'. In Manovich's approach there is little room to

both pay attention to the material properties of the interface as well as its 'transformable character'.

Galloway puts it another way by considering the interface an 'autonomous zone of aesthetic activity' (Galloway 2012, vii). Yet this aesthetic activity is varied to say the least. There is a great difference between certain kinds of activities through which the interface affects and produces effects. In other words, different interfaces set different 'trajectories' for human and non-human relations (O'Grady 2015, 131). The types of manoeuvres discussed in chapter 2 have the possibility of being folded into these inter-face relations. Yet they are markedly different from the strokes, taps and double-taps of the mobile interface that also constitute an interaction. It is important to distinguish between these two primary variations: extended activities or manoeuvres writ large (occupations, splinters, rhizomes, etc.) and the inter-actions in which bodies come to interact with the interface itself. The 'navigational interface' (Lammes 2011, 5) is the pivot between the two.

It is possible to characterize these positions in relation to their orientation. The Kittler-McLuhan-Manovich stance is resolutely inwards into the object. The Galloway position is, on the contrary, an external orientation towards practice. Whilst the former delves even deeper into the aesthetic and graphical forms of the interface-as-media, the latter projects outwards to consider how media(s) form relationships with others. One is a stabilization of the interface, the other is the unsettling of it.

As Galloway (2012, 30) argues, interfaces are less surfaces or planes of content than they are sites of 'thresholds and transitions'. 'An interface is not something that appears before you but rather is a gateway that opens up and allows passage to some place beyond' (Galloway 2012, 30). As Hookway (2014, 12) explains:

> The *sur-face*, as a facing above or upon (*sur-*) a given thing, refers first of all back to the thing it surfaces, rather than to a relation between two or more things. A surface exists

> primarily as an aspect of that which it surfaces, before it can be said to perform any additional functions or hold any other characteristics that relate to its facing.

In this, an interface is certainly not a surface, as the former

> …does not primarily refer back to a thing or condition but rather to a relation between things or conditions, or to a condition as it is produced by a relation. The interface as a problem does not primarily bear on the characteristics or properties of the entities it interfaces, though it may do secondarily. Rather, the problem of the interface bears on what must take place in the drawing together of entities into a relation, and to the combined or synthesized behavior of those entities within that relation. (Hookway 2014, 14)

But they are also far more than their reading as digital objects or even digital relations allows for. Hookway (2014), for instance, traces the term back to its roots as a term coined by engineer James Thomson, in relation to his work on fluid dynamics. At this time, in 1869, the interface

> …denoted a dynamic boundary condition describing fluidity according to its separation of one distinct fluid body from another. The interface would define and separate areas of unequal energy distribution within a fluid in motion, whether this difference is given in terms of velocity, viscosity, directionality of flow, kinetic form, pressure, density, temperature, or any combination of these. From difference the interface would produce fluidity. As a boundary condition it would be inherently active. *While imperceptible in itself, it would be inferable according to its effects*. (Hookway 2014, 59, emphasis added)

Thus, Hookway's (and by extension, Galloway's) definition of the interface stays true to Thomson original 1869 definition of a dynamic boundary or threshold. It is this definition I put to use in the next section, as it contains a navigational dimension that other definitions do not cover. It also points towards another as yet unexplored aspect of the interface italicized above. When the

interface works the interface as 'thing' remains unseen and is only 'inferable according to its effects' – i.e. a difference in velocity, viscosity, flow, etc. This invisibility of the interface is what Jay Bolter and Richard Grusin (2000, 21) refer to as the 'logic of transparent immediacy'. The interface only purports to work if its materiality slips into the background and only its effects become perceptible.

Navigational Interfaces

But what does this 'working' entail? What does the interface seek to do? Put simply it seeks to open up phenomena to the world. An interface is an exposure to a reality. In the context of the digital map the interface works to bring the user into relation with the phenomena of the world – anything and everything accessible via the medium of the digital map. Or, put otherwise, via the 'navigational interface' (Lammes 2011, 5). This is what Google Maps desires to do when it says users can have 'the world's geographic information at [their] fingertips' (Google 2015, n.p.). Thus, the interface becomes less a 'technolog[y] of vision' as suggested by John Pickles (2004, 81) and more a technology of aesthetic activity as envisaged by Galloway; exercising what Mark Paterson (2007, 128) would call 'feeling at a distance'. In other words:

> …with the proliferation of touch screen interfaces, users of new digital mapping platforms engage not in a double-click manner, but in a *double-tap* action. In order for users to zoom into a mapping interface of any touch screen device, they have to perform a double-tap of the desired area. Completing the command will see the map focus. In so doing, as Google Earth claims…it becomes even more intimately possible to access the world's geographic information through one's fingertips. (Hind and Lammes 2015, 80-81, original emphasis)

How do we join up these inter-actions and wider manoeuvres in the midst of the protest event? How can both be considered in relation to the navigational interface? I argue that it is through the

art of navigation – demanding a specific kind of attention and orientation – that manoeuvres and gestural inter-actions come together. More commonly than ever it is through the latter that the former is enabled:

> …as these touch screen capabilities are more prevalent in mobile devices such as smartphones and tablets, double-tap also refers to actions 'on-the-go' in which navigational knowledge is sought through the touch of these digital interfaces. (Hind and Lammes 2015, 81)

This double-tap interaction is short-hand for a host of gestures made possible by the rise of touchscreen devices. These may entail a near-infinite number of gestures including, but not limited to: the long press, flick, pan, pinch, rotate, scroll, spread, tap, double-tap, two-finger scroll and the two-finger tap. The Windows 8 Operating System (OS) – the first fully-functional touch-enabled Windows OS – recognizes eight such gestures (Microsoft 2015, n.p.), whilst Apple's own include an ever-more elaborate suite of interactions including the 'three-finger swipe', the 'two-finger double-tap' and the 'two-finger swipe to the left from the right edge' (Apple 2015, n.p.).

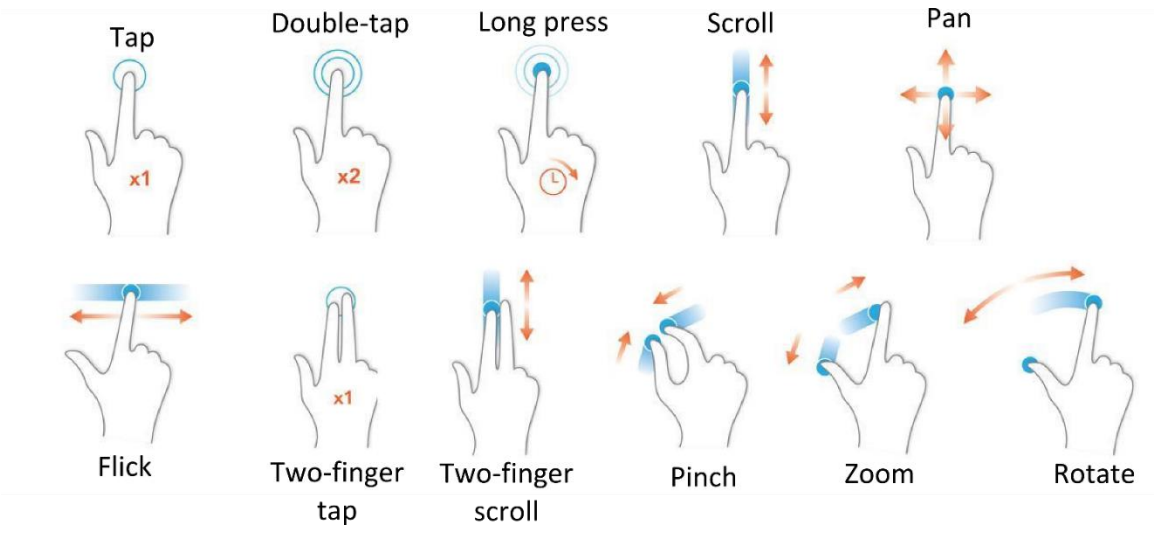


Fig 4.2| Multi-touch gestures. Source: adapted from Wikipedia (2016)

Each suite of multi-touch gestures has been developed for use across a range of mobile devices from smartphones to tablets and laptops. Some of these gestures (zoom, etc.) have more use on

smaller interfaces (smartphones), whilst others (edge swipes, etc.) are optimized for trackpad use (laptops). Regardless of device, the rise of touchscreen functionality is directly connected to the increased desire for mobile computing in various forms. In other words, the rise of the 'mobile interface' (Farman 2012, 16).

The reason why 'double-tap' assumes a greater prominence in the detailing of this shift to touchscreen devices is that it purports to bring the world closer to the user, once again through the 'logic of transparent immediacy' that Bolter and Grusin (2000, 21) identify. So:

> Whereas the keyboard is a passive mechanical channel between the computer and the user, haptics enables a more active exploration and allows the user not just to *see* three-dimensional shapes represented on the screen, but also to *feel* them and interact with them…Haptics devices are becoming cheap and ubiquitous, increasingly accessible via everyday technologies such as mobile phones. These unfolding technologies are a set of augmentations that begin to play with an emerging multisensory realm, one that talks of the engendering and engineering of 'immersion', of 'presence', of 'aura' through the addition of touch. (Paterson 2007, 128, original emphasis)

It is, in short, an illusion through which the interface gains its power. It is through the interface that users purport to be able to seamlessly interact with the world – with the material interface itself becoming transparent. Like Bolter and Grusin suggest:

> What designers often say they want is an "interfaceless" interface, in which there will be no recognizable electronic tools – no buttons, windows, scroll bars, or even icons as such. Instead the user will move through the [digital] space interacting with the objects "naturally" as she does in the physical world…In this sense, a transparent interface would be one that erases itself, so that the user is no longer aware of confronting a medium, but instead stands in an immediate relationship to the contents of that medium. (Bolter and Grusin 2000, 23–24)

Moreover, as Lammes argues '[i]nstead of simply showing 'frozen' spatial information, interfaces now also perceptibly take part in the creation of spatial relations' (Lammes 2016, 3). Since Bolter and Grusin's intervention in an early digital age, interfaces are capable of intervening in navigational tasks rather than merely (re)presenting spatial information. On traditional desktop computers and non-touchscreen devices there are multiple human-machine interfaces that need to be mobilized in order for a cartographic command to be carried out such as 'search for location X', 'pan across environment Y' or 'zoom into feature Z'. The most obvious are the keyboard, which provides the ability for the user to type in the letters of location X; the mouse ball, which allows the user to move across environment Y; the left-mouse button which permits the user to 'double-click' the map and zoom into it; and the screen, which allows the user to actually witness these decisions being made and to see the map itself.

Each of the above – the keyboard, the mouse, and the screen – is known as a peripheral. That is, a device *external* to the computer itself, nonetheless interfacing with it in some way to provide either an input or output. In the case of the keyboard and the mouse these are inputs. Both enable the user to input text or to execute decisions in a GUI. Put otherwise, input peripherals are primarily human-to-machine interfacings permitting the user to issue commands – of a textual, graphical and navigational nature – to the computer itself. On the other hand, the screen is an output peripheral. It allows whatever decisions have been made, and commands have been executed, to be displayed for the user in question.

This is a necessary feedback loop that enables the user to 'know' (or at least the semblance of knowing) what command the computer has actually carried out. For instance, whilst one could reasonably assume the cartographic commands introduced above had been performed if the specific keystrokes, clicks and navigations had been followed, this would rely on a strict interpretation of the necessary commands (*these* keystrokes, *that* number of clicks, etc.) and a working knowledge of the operational state of the machine. Any adjustment (deliberate or

accidental) to the commands, or a deterioration in the state of the machine would lead to an operational failure. In other words, the cartographic commands would not be completed.

This is what Bruno Latour calls a 'double-click' philosophy (Latour and Hermant 2006, Latour 2013), in which '[t]he little computer mouse makes us used to seeing information as an immediate transfer without any deformation, a *double-click*' (Latour and Hermant 2006, 18, original emphasis). In one sense it is a critique of mimesis that has been prevalent across various academic fields from Human-Computer Interaction (HCI) to media studies, in which the interface is commonly only, as Lammes (2016, 5) suggests, 'theorized as an immaterial and one-dimensional membrane or surface' as opposed to a transformative material object. It is also another, material, reading of the same processes that Bolter and Grusin (2000) identify: that of the allegedly transparent interface. What is different in Latour's account is that he ties it explicitly into hardware use, by suggesting that the philosophy itself is operationalized through the use of peripheral devices such as keyboards and computer mice.

Unlike Latour, however, the intention here is not to position this technological interaction as indicative of a modernist illusion of 'information without transformation' (Latour 2013, 127) or what Norton (2013, 3) calls an 'anti-mode' in relation to Latour's recent work on 'modes of existence'. His explication of this double-click mentality is, perhaps more accurately, a lament for a closer, tactile and analytical approach to encountering technological phenomena. It is, in essence, a methodological approach – a way of doing. Latour desires to take this edifice down; only striving to understand its construction in order to set about a dismantling and a re-construction in another form.

Fig 4.3 | Touchscreen layers. Source: Stavrakis (2012)

Things are different, however, with the kind of touchscreen device the Sukey platform was designed to be used on. There are three reasons for this. Firstly, touchscreens provide a combined input/output permitting the user to both issue commands (search, pan, zoom) in the form of specific 'multi-touch' gestures (tap, pan, double-tap) *and* relay the results of these commands back to the user in the form of a visual feedback. Materially these are different 'layers' comprising of, at the least, a protective shield, a capacitive touch panel, an electrical field and a TFT (thin-film transistor) LCD display. Together these comprise what one would collectively call 'the interface'. Indeed, unless the device is pulled apart or otherwise broken, these sub-layers remain invisible. Phenomenologically, then, the user interacts only with the top layer of such as attached to the front of a mobile device – and yet visual feedback is provided via the TFT LCD display, and haptic gestures are only registered through the capacitive touch panel.

From the latter perspective, the touchscreen performs a dual purpose. Though materially it comprises of multiple internal interfaces and interfacings (between shield and touch panel, touch panel and electrical field, etc.), for the human operator it is a double interface providing both human-to-machine (input) and machine-to- human (output) interactions; even if this 'impedes immersion' due to this convergence of input and output (Kaerlein 2012, n.p.).

Whilst visual feedback might seem like the primary form of relay for the user to ascertain whether their commands have been performed, touchscreen devices are also reliant upon other particular vibrations and sounds. These mitigate against some of the apparent pitfalls of using a mobile touchscreen device as outlined by Kaerlein (2012). Put otherwise, the touchscreen device is a 'double interface' in a communication flow sense (input/output) but is also a double, or even triple, interface for the way in which it provides feedback in more than one register. As touchscreen devices differ from previous iterations of the mobile phone or laptop because they lack actual, individual, raised keys that can be felt apart from the main body of the device, other ways of notifying users of their actions is necessary. More often than not this is in the guise of a small vibration every time the user touches the interface. This allows users to make a binary distinction between touch and non-touch – although not to differentiate between the type of action performed (letter typed, application opened, etc.). Although this is perhaps a rather primitive haptic feature – especially for those able to feel braille and interpret refreshable braille displays – it nonetheless is a radical feature for those unaccustomed to receiving anything other than visual cartographic feedback.

Secondly, with the lack of any peripheral devices such as a separate keyboard, mouse, or screen the input functions that interface with the GUI become internalized. In other words, they become 'black-boxed' and away from view. As Latour (1987, 2-3) suggests '[t]he word black box is used by cyberneticians whenever a piece of machinery or a set of commands is too complex. In its place they draw a little box about which they need to know nothing but its input and output'. As such the mobile device itself becomes a black-box in its entirety – with the mechanical and electronic aspects of its working hidden from view. Yet this is not simply a rhetorical flourish by cyberneticians and Actor-Network theorists alike. Many smartphones cannot be opened by the user at all – only 'interfaced' with power and transfer cables or via Wi-Fi and Bluetooth connections. Instead, when things fail and the device stops working, it must be sent back to the manufacturer. The only 'certified' people that have permission to open the black box itself are

employees of the manufacturer themselves. The black-boxing of the mobile device is now a common, and crucially *accepted*, feature. This is another way in which the mobile touchscreen device has ensured a 'double-click' importance.

Thirdly, following Paterson, touchscreen devices engender and enable 'a more active exploration' with digital phenomena, as opposed to the 'passive mechanical channel[s]' (Paterson 2007, 128) or 'metronymic and calculative clicks' (Hind and Gekker 2014, 6) of peripheral inputs like keyboards, mice and even gaming joysticks and controllers. The touchscreen device is, inversely, portrayed as an object with inherently playful characteristics that allow users to artistically, sensually and intimately 'feel' their way across the interface itself, and in turn, 'feel' or 'manipulate' the very things they encounter on the device. This is often how touchscreen devices are sold – as more 'natural' or 'intuitive' in the way users can interact with it. Peripherals are unambiguously pieces of computer hardware. Keyboards can be used for nothing other than inputting characters into a computer, and mice have no other function than to allow for the navigation across on-screen spaces and the selection of phenomena within them.

Yet the interface is ambiguous in form and requires little reduction to cast it merely as a surface as opposed to a device component. Thus one is invited to view it alongside other similarly flat, rectangular surfaces: panes of glass, paint canvases, office desks and coffee tables. Any of the gestures and movements one can perform in relation to these can, to an extent, be performed through the touchscreen interface. In other words, one can see through the interface like through a pane of glass, perform painterly strokes like on a canvas, position various objects like on an office desk and move objects around like on a coffee table. In essence, the touchscreen is seen as 'intuitive' and 'natural' because it performs skeuomorphically as a non-digital object.

This is what is meant by a shift to a 'double-tap' mode of (inter)action (Hind and Lammes 2015, 80). Double-tap characterizes the shift to both touchscreen and mobile devices. Not only does this strengthen Latour's double-click philosophy – by updating and refining it – but it also draws

attention to these gestural and mobile dynamics so integral to navigational practices. In more specific terms, then, the kinds of navigational practices that are generated during protest events. The Sukey platform was an integral 'pivot' between the gestural 'double-tap' actions and spatial manoeuvres such as occupations, splinters and rhizomes, allowing navigational information to flow through the platform, enabling users to make navigational decisions during protests.

In his description of the 'online Paris' Latour and Emilie Hermant create, the former alludes to the tactile affordances of representations:

> We can see the social; we can even touch it. Through comments, images and models we can show this showing and make this touch tangible provided we follow up tracers, a little despised, often barely visible, that bureaucracies abundantly multiply, that computers materialize, and that we call "paper slips" when they circulate and "signs" when they have been fixed to something. (Latour and Hermant 2006, 18)

Further on in the same text, Latour offers a little more on this:

> The person pointing to the rat's neuron touches a sheet of glossy paper, the head end of a network of multiple and heterogeneous substitutions. Clearly, there is a reference; what he [a biologist by the name of Etienne Audinat] says is real; the proof lies at his fingertips, provided he doesn't, for a single second, leave the narrow shaft in which layers of intermediaries flow, each differing from the one before and the one after by a miniscule gap, a hiatus. (Latour and Hermant 2006, 23)

The attempt, therefore, is not to discredit Latour's exposure of double-click. Instead, the intention is to build on it. His characterization of double-click is a precursor to the development of a methodological approach (ANT). The desire here, on the contrary, is to develop an understanding of a double-tap mode of existence in order to fully comprehend the gestural, mobile nature of the navigational interface. Latour's double-click philosophy does not, and cannot, take into account

the shift to mobile forms of computing. As a result, the three aspects identified before remain unexplored as phenomena – despite their integration into mobile devices and ways of navigating.

If employing double-click, we cannot understand how touchscreen devices provide a combined input/output for both issuing commands and relaying the results of those commands back to the user. This is different to how peripherals are used, and means we mistake and mis-locate the feedback mechanism at play. Further, we cannot then understand how the device blackboxes these now-internal mechanisms designed to generate combined input/output functions. With double-click we are forced to rely upon an outdated metaphor of using a computer mouse and desktop. As a result, we cannot consider how the device is able to become mobile and thus affect navigation. Finally, being loyal to double-click results in missing the different, purportedly 'intuitive' and 'natural' modes of interaction with touchscreen devices. Instead, one is stuck with considering that our only interaction with phenomena in a digital environment is through the clicks of the mouse button. As such, we cannot consider the quality or breadth of these new gestures.

In turn, and more appropriate to the Sukey platform, we fail to identify the generation of manoeuvres during protest events. With these moves made the interface morphs into a stable, mobile, technological proposition for this purpose. Without them we are left to wonder exactly how and why the touchscreen – as a navigational interface – plays a significant role in mediating the suite of counter-containment manoeuvres introduced in chapter 2.

Returning to the definition of an interface as a kind of 'threshold or boundary condition' (Hookway 2014, 16) the coming-into-being of particular protest manoeuvres can be detailed. Only when a threshold is crossed – courtesy of a building of momentum – is the manoeuvre fully realized. Up until this point it operates across a virtual field (in the Deleuzian sense) ready and primed but not actualized. Employing Hookway's (2014) more expansive, and original, definition of the interface allows for these connections to be made. Without it, the interface can only be comprehended in

relation to digital devices. If one is to be able to draw connections between how such thresholds or boundary conditions act and manifest themselves then the job of understanding how mobile, digital mapping technologies are integrated, enrolled and assembled in through navigational practices becomes a much easier one.

In shifting focus from double-click to double-tap one becomes more attentive to so-called 'mapping moments' (Dodge et al. 2009, 234). Although I have suggested before that one difference between Latour's double-click and the concept of double-tap is that the former is a methodological move and the latter an empirical one, I concede the latter also allows methodological moves to be made. Turning attention to mobile devices as opposed to desktop computers does not on its own allow for novel, methodological approaches to magically be devised. This is why outlining the combined input/output function of the touchscreen, the blackboxed nature of the device, and the allegedly 'intuitive' interaction it affords, is necessary. As will be seen throughout, for manoeuvres within a protest event these comprise of a) an increase in the level of care taken (attention) b) a navigational desire to re-orientate oneself in relation to an external body or occurrence (orientation) or c) an increase in the level of risk taken (intensity). Each of these aspects is mediated by the navigational interface.

Conclusion

In this chapter I have attempted to do several things. In the first instance I have argued, following Pold (2005) and Andersen and Pold (Andersen and Pold 2011) that the interface brings with it a certain set of aesthetic principles. However, despite the prominence of a particular kind of design aesthetic centered on modernist principles of clarity and functionality, there are other such interface aesthetics that propose different realities. One of these – an 8-bit aesthetic – originally borne out of technical constraints has come to embody a counter-culture. Despite the slow release

of these constraints over the decades pixelated graphics – the hallmark of 8-bit aesthetics – has consistently re-emerged as a stylistic and, further, political choice for designers.

Yet the interface itself is variously a material object, a mediator and an effect. In the first instance, the interface is a major component of digital devices from desktop computers to mobile smartphones. It is, in other words, a material object. Yet, despite mimetic pretenses, it is also a 'sign-thing' (Lammes 2016, 5) that allows particular actions to take place between different actors whether they be human or non-human. In an original sense an interface is a 'dynamic boundary condition' (Hookway 2014, 59) or a 'zone across which all activity must occur in order to possess meaning, force, or power' (Hookway 2014, 63). As a result, the interface is also simultaneously an 'interface effect' (Galloway 2012) that generates a particular kind of socio-spatial outcome as a result of its ontological status as a boundary condition, zone or threshold between two or more possible states. Without these various understandings of the interface it is impossible to see how it can generate particular actions in and through the world.

However, it is the 'navigational interface' (Lammes 2011, 5) of mobile devices that brings about a 'double-tap' (Hind and Lammes 2015, 80) interaction central to the Sukey platform. It was through the taps, stokes and pinches of the capacitive touchscreen that allowed individuals to interact with spatial phenomena for the purposes of navigating through protest events. The reason for why this double-tap articulation is critical, is that it is through this interaction that it purports to bring the world closer to the user. As a double or even triple interface, the capacitive touchscreen allows for inputs and outputs in various sensory modes besides the exclusively visual including the haptic and the aural.

In order to make sense of this it is useful to employ one of Galloway's (2012, 51) 'regimes of signification'. The case study in question is the combination of an inward orientation towards a specific, unified and 'coherent aesthetic' (Galloway 2012, 46) of 8-bit or pixelated graphics with an outward orientation towards the unspecified, splintered and 'incoherent politics' (Galloway

2012, 47) of de- and re-territorializing manoeuvres. The pivot between the two, I argue, is the navigational interface that allows these states to be worked on and across. The activation of this navigational interface via double-tap activity is the contention within this chapter.

Chapter 5 | Risk

This chapter will attempt to unpack the nature of risk – *vis-à-vis* digital mapping and the protest event – in order to draw attention to a number of productive tensions in the disruptive cartographic enterprise. In the previous chapter I argued that the navigational interface was simultaneously a material object, a mediator of activity and an effect (an 'interfacing'). It is through such an interface that navigational knowledges are sought; allowing users to garner critical information pertinent to their geographic location, personal safety and activist aims.

Risk manifests itself through particular spatial practices. It is through the performance of various kinds of manoeuvres different degrees and kinds of risks are exercised, calculated, advanced, and variously celebrated, intensified, mitigated against or ignored. In a cartographic sense, risk is a state that occurs across, and in relation to, 'calculable territory' (Hannah 2009, 66) during protest events. In other words, that calculations made by activists in demonstrations variously affect their exposure to numerous risks such as police containments.

Yet, historically, as Sam Kinsley (2014) suggests, there have been few studies on the calculable practices of non-sovereign bodies, or on how a 'distributed model of sovereignty and control [can] exist' (Galloway and Thacker 2007, 47). As Hannah (2009) and Rose-Redwood (2008; 2012) argue, such a process depends on a sequence of necessary inscriptive actions that - as Elden (2013) rightly says - comprise various socio-cultural 'techniques' extending from geo-carto-tools (used for surveying, triangulation, and statistical analysis, for example) to wider political and cultural concepts, epistemologies and practices. Although states and mapping companies still undertake a large proportion of this work, so do extra-institutional actors.

Secondly, it will be argued that cartographic disruption is an inherently risky endeavor. This allows us to say two things. Although calls for 'ever-riskier' cartographic practice – as argued by the likes

of Gerlach (2014) – are increasingly prevalent, it shall be argued that disruptive cartographies oscillate between *escalating* and *minimizing* risk. Indeed, that ever-riskier cartographic practice – although a welcome clarion call for open-ended mapping endeavors – present an unavoidable, unresolvable tension at the heart of the production of cartographic knowledge. In fact, as will be suggested here, it is the acknowledgement and successful management of this tension that leads to the most effective cartographic projects.

Next, Louise Amoore's (2009, 2011, 2013) work will be presented as a potential entry-point into the discussion around risk, anticipation and political action that is missing from the above-mentioned literature on calculable territories. As such, disruptive cartographies will be presented as operating through not simply a *cartographic* logic but an '*anticipatory* logic' (Anderson 2010, 792, emphasis added). In fact, it will be argued that cartographic logic *inherently involves* an anticipatory logic also, in order to properly attend to what has been called 'risky territory' (November et al. 2010, 581). The unpacking of the Deleuzian definition of the virtual – as a 'real' but un-actualized state – is integral here in order to properly situate this argument. In other words, in order for a disruptive cartographic project to occur, it must work across future, possible terrains in order to secure and advance an operational present.

Calculable Territory

Establishing the connection between spatial practice, cartographic logic and the concept of risk is an important first move. In Matthew Hannah's work on the West German census boycott movements of the 1980s, the concept of 'calculable territory' (Hannah 2009, 66) is used to identify a set of largely state practices that involve the ordering of geographical knowledge and the imposition of such onto a population through various forms of 'spatial inscription' (Rose-Redwood 2008, 289). As Stuart Elden has argued, territory itself is neither a benign force, nor commensurate with other corollary theorizations such as 'political-economic notions of land, nor even…[in the]

political-strategic sense of terrain' but must be understood, instead, comprising 'the techniques used to – amongst other elements – measure land control and terrain' (Elden 2013, 17).

Territory is far more than the ground on which it is based. Yet Hannah further explains that calculable territory 'remains not merely relevant but absolutely central to *all* modern forms of governance, including sovereignty' (Hannah 2009, 68, emphasis added). The reason for this is that calculation – of territory, of population, of capital flows – is a direct attempt to measure and attenuate differing kinds of governmental risks that seek to threaten the security, extent and strength of sovereign power. Therefore, calculation is a logic through which such risks can be evaluated and acted upon in order to solidify such power. Some of the efforts to reduce territorial risk have been monumental – on a scale only made possible by nation states. Even then, the successful execution of such projects is by no means assured. Matthew Hannah's (2009) analysis of the efforts by the West German state to implement a new federal census show this in stark terms, as does Matthew Edney's (1997) explication of the British Empire's mapping of India. In regards to the former, such an ambitious project was driven by a need to perform modern 'biopolitical activities' (Hannah 2009, 70) such as state planning, educational provision and welfare delivery without which the state would cease to operate effectively and efficiently. In the absence of these huge calculative efforts the state itself, it is argued, leaves itself open to higher degrees and kinds of risk that intersect with basic sovereign functions. In plain terms, these risks manifest themselves most prominently across a spatial terrain affecting, for instance, the boundary-making and boundary-securing of the state, the movement of citizens, or the operation of commercial activities.

Although sovereign forms of power have historically involved the ordering of geographical knowledge for purposes of population and territorial control, they are not alone in this. Indeed, too often have territorial concerns been wrapped up in notions of sovereignty and sovereign power – even if 'the private interests of capital also have a considerable stake in reconfiguring the

interiority of the territory as a calculable space' (Rose-Redwood 2012, 301). Whilst sovereign and colonial powers have committed to undertake ambitious, sometime disastrous projects in order to ameliorate potential threats to their existence, territory is performed in many other arenas by many other actors who not fit into the usual mould – either as quasi-state actors or through the private interests of capital. As Galloway and Thacker suggest, the sovereign state has shifted to articulating a new 'regulatory model…fostering, impelling, and optimizing life' (Galloway and Thacker 2007, 76). Moreover, the state is now not the sole actor capable of calculation; not least in relation to territorial ambitions. Yet, as Sam Kinsley (2014, 369) has noted 'there have been fewer studies of calculative practices by non-state actors' despite this shift. It is this dearth of research on such that the first section in this chapter seeks to address.

Further, as has been discussed in previous chapters, 'disruptive cartography' does not concern state actors. The practice of mapping in this mode does not 'ape' state practices, nor exist in a dualistic relation to it, or even serve to 'subvert' it in any way. It cannot, also, be seen as sovereign form, if sovereignty is defined as the 'ability to suspend the law' (Galloway and Thacker 2007, 115) rather than the capacity to merely impose it. At no point, despite tactical pretenses, did Sukey or the activists allied to, and around it, magically assume either ability. Yet it resolutely mobilizes the above conceptualization of territory in order to perform similar moves that might otherwise be seen as the preserve of the state. Or even still, to perform actions that equally might not be seen as the preserve of the state, at least in relation to territorial concerns. The way in which, for example, disruptive mappings have sought to provide care in an otherwise care-less space.

But how does calculability enhance, or help codify the concept of territory? As Kinsley (2014) suggests, few studies have been undertaken that approach territory from a non-sovereign perspective. Therefore, in order to look at how it has historically been appraised we need to evaluate these sovereign definitions. For Hannah, calculation enabled the 'modern governance of populations' through a commitment towards a 'general science of order' that

> …had two components: *mathesis* and *taxinomia*. The first concept denotes a commitment to approach the known world as a calculable order of "simple natures" representable (in principle) through algebra; the second, *taxinomia*, refers to the ordering of complex or composite phenomena by means of establishing their relations of identity and difference. (Hannah 2009, 67)

On its own, the conceptualization of territory does not necessarily gesture towards this algebraic representation or taxonomic relationship. Put simply, calculable territory refers directly to forms of territorial action that directly enroll *mathesis* and *taxinomia* in the art of governance. In order to sketch out this calculable territory, Hannah turns to a model devised by Reuben Rose-Redwood (2008) that lists six operative elements, simplified to: a basic coordinate system; boundaries; built, legible environment; demographic information; additional data; and event-based knowledge (Hannah 2009, 68).

The project undertaken by the West German state during the 1980s to enforce a census on the population amounts to number four in the model: the acquisition of demographic information pertaining to the citizens of the state. The triangulation of India during British imperial rule across the 18th and 19th centuries served numbers one ('a basic coordinate system') and two ('boundaries') in the model in order for further state and non-state activities to take place; everything from general administration to commercial exchange. Each concerned the direct enrollment of both *mathesis* and *taxinomia*. Firstly, that a numerical value could be attributed to various phenomena and spaces and, secondly, that such values could be organized and scrutinized in reference to other commensurable valuations in order to discern similarities, proximities and differences.

Yet in detailing this model, Hannah suggests that the heuristic 'clearly suggests what would be entailed in the emergence of a more total "surveillance society"' (Hannah 2009, 69) – even if the reality is far more fragmented in its operation. However, rather than consider the above in relation

to what Philip Agre (1994) would call the 'surveillance model', it is perhaps more productive to fit each of the above into the cyclical process of the 'capture model' instead. This, in contrast, entails the acquisition and representation of data. 'The capture model', argues Agre (1994, 109, emphasis added), 'describes the situation that results when *grammars of action* are imposed upon human activities'. However, although the above is a general structure, it is not necessarily vertically organized so that, for example, number three is reliant on number two, which in turn is reliant on number one, despite Hannah's suggest that the above constitute 'basic "layers" or "levels"' (Hannah 2009, 68). As such, each 'grammar' has the potential to work independent of the other.

Event-based knowledges, for instance, are not necessarily dependent on additional data 'tied to demographic and economic units' (although often are, of course) (Hannah 2009, 68), and built, legible environments do not necessarily require the operation of boundaries – state – or otherwise. A good example of the latter are telecommunication networks that in practice act entirely independent of such, as projects such as 'Border Bumping' (Oliver 2012, n.p.) reveal.

These 'grammar of action' suppose a certain degree of violence inherent in the notion of capturing phenomena. As Hannah echoes, the 1987 West German census controversy 'highlighted the fact that the knowledge needed for biopolitics or sovereignty *presupposes* intervention' (Hannah 2009, 70, emphasis added). In other words, in order to impose a new calculative process onto a population, for the purposes of exercising biopolitical or sovereign power, a violence of some kind of another had to be wrought on those subject to the process. Even if the model should be thought of, as Hannah suggests, 'neither as a an exhaustive nor…a fully realistic representation of the role of territory in actually existing power relations' (Hannah 2009, 68), the abstraction chosen to represent this process (i.e. a layering) nonetheless has a performative power that affects this representation. Re-inscribing the above as separate but possibly intersecting 'capture cycles' allows us, in a methodological sense, to re-imagine calculable territory.

Moreover, the general emphasis on calculable territory being a sovereign act is still implicit in the above model, a position only supported by Rose-Redwood's (2012, 300, original emphasis) contention that the number itself is a '*political technology* that renders the world calculable as a strategy of government' rather than govern-*ance* more generally. Indeed, in much of the model above, most of the elements are defined in relation to state activities – whether in the form of boundary-making or census delivery. This continued emphasis on distinctly state forms of calculable territory is attributable to a general approach that is indebted to the work of Foucault, and in particular, his *Security, Territory, Population* lectures (Foucault 2007) that focus on 'governmentality'. Wresting conceptions of calculable territory away from this Foucauldian framing is therefore necessary if we are to consider it without reference to sovereign power. The constant desire to always return the practice of calculation back towards the state prevents us from being able to witness other actor's use of it in and of itself.

Event-based Knowledges

It is the final of the six elements however, that is of most relevance, as it is during protest events that event-based knowledges are produced and interacted with most readily. Whilst it can generally be suggested that the speed of each operation in the model above *increases* as one progresses through the elements this should not necessarily be the distinguishing feature of each. Although a wholesale coordinate system might take years to lay down, and event-based knowledges possess a dynamism that temporally limits their operation; one does not preclude the other. That is, the production and maintenance of the former may, and does, include the latter.

Whilst a protest event may take place within an urban environment deemed to have operated through a basic coordinate system built at the beginning of the modern era (calculative element number one), the ongoing production of internal boundaries (calculative element number two) and constant updating and re-generation of the built, legible environment (calculative element

number three) muddy this temporal framing. Whilst the platform was oriented towards the generation of event-based knowledges, this generative force depended on the affordance of the deployed mapping platform that in turn was *selectively interpreting* the built, legible environment in order to display different types and levels of infrastructure. Event-based knowledges, therefore, do not act alone but in concert with many of the other operative elements of calculable territory across temporal registers.

Moreover, it is perhaps the one calculable mode which is most dissociable from state, sovereign action – therefore making it a relatively easier theoretical move to begin with the most discernable extra-state process. Whilst it is possible for a non-state or non-corporate entity to produce a basic coordinate system[7] or even a built, legible environment; it is practically more believable for such bodies to engage in the collection of demographic data (calculative element number four), additional data (calculative element number five) and event-based knowledges (calculative element number six). In more detail, Hannah notes the importance of

> …[m]ore fleeting, 'transactional' or 'event-based' knowledge, that is, records of individuals being at particular places doing specific things at specific times (e.g. buying something with a credit card or running a red light). (Hannah 2009, 68)

The identification of event-based knowledge as a specific kind of territorial inscription provides the perfect opportunity for a wider interpretation of calculable territory beyond the state. As they are defined by Hannah (2009, 68) as '[m]ore fleeting' activities compared to the formation of coordinate systems or the creation of a legible built environment, they enter into an 'everyday' framework through which a whole plethora of actors become able to generate event-based knowledge. Whilst it may be fanciful to suggest that non-state entities are capable of designing coordinate systems (less still being able to legally enact them), and the capture of 'basic socio-

[7] The rise of the what3words platform is illustrative of this, with the world divided up into 57 trillion $3m^2$ squares each addressed with a 'unique combination of just 3 words' (see; what3words 2016, n.p.).

economic or demographic information' (Hannah 2009, 68) now as easily carried out by private companies, arguing that event-based knowledge can be generated by other kinds of actors is far less contentious.

In fact, it could be said that these fleeting records actually characterize the activities of non-state actors more than they do the state itself. In essence they comprise the minutiae of quotidian experience: from commuting to work, to purchasing goods, and engaging in leisure activities. The event-based knowledges produced from such activities do not, by default, intersect with the state, but instead exist in their own extra-state worlds. Although this is not to say that they don't intersect with the state, many do. However, it is (a) not the state that is necessarily the primary driver of such knowledge, nor is it (b) a default (inter)mediary for such activities.

Moreover, with the rise of digital, mobile technologies it becomes absolutely critical to analyze what, historically, is a novel, emergent capacity to capture, record and store vast quantities of everyday data. Not only is it theoretically more believable that extra-institutional actors participate in the generation of such (as opposed to other calculable territorial practices), but it is being practically shown to be the case. The comparative ease at which quotidian data can be produced is testament to this. Indeed, much of the event-based data that is generated is backgrounded or automated in some way; from geo-locative data to web-tracking data. It is this kind of data that we generally refer more appropriately to as 'metadata'. In other words, data that provides the context of a related packet of data rather than the packet content itself. Whilst geo-locative data commonly provides us with a geo-coordinate of some kind, based on a general coordinate system, it does not always give us the context for this location – the *what, why, when* and *who*.

This is why the concept of calculable territory needs to be understood in more detail and in relation to these everyday activities, as they constitute the most novel of calculative territorial processes. Yet, digital, mobile technologies do not always float free from these other operative

elements. In fact, they rely on many of those very same ones discussed by Rose-Redwood and Hannah. But more than this: they also aid in actively producing, tweaking and maintaining them – perhaps even on that rare occasion to dissolving, collapsing or re-constituting them. Perhaps then, it is no grand assumption to posit the following: it is *through* event-based knowledge that all other calculative territorial practices now flow.

With these clarifications in mind it perhaps becomes a little less easy to argue that the concept of calculable territory should be defined exclusively in relation the sovereign power. Yet, Foucauldian emphasis on governmentality has, up until now, only served to make any such argument harder to propose – by limiting the space in which calculable territory might be theorized. If these event-based calculative territorial processes have the capacity to engage with, affect and otherwise re-constitute other operative elements – from basic coordinate systems to demographic data – then a certain power lies in the ability to intervene and disrupt such activities.

Making Things Legible

In order to unpack the notion of calculable territory a little bit more, Hannah identifies 'two distinct but mutually dependent epistemological moments' (Hannah 2009, 68) that define it, and are as equally applicable to one process as it is another. The key point is that each one of Rose-Redwood and Hannah's identified calculative territorial processes are defined by a commitment to, and deployment of, these two logics.

The first of these is *legibility*, which Hannah explains with the help of James C. Scott (1998) and Michael Curry et al. (2004) is

> …a matter of inscribing territory with basic systems of geographical reference that allow knowledge about populations, resources or activities to be indexed to specific locations, and hence make territory readable. (Hannah 2009, 68)

In general, to make something 'legible', one has to construct a system through which the practices in question can be delivered. Further, a vocabulary will also certainly be necessary through which the 'thing' can be articulated and referred to. There must be an anchoring in the former and more often than not in the latter too. Making something legible therefore, allows it to be 'read' according to the prescribed system; both in operative and interpretative terms. In contemporary sovereign terms the most common of these practices is surveying, or more specifically, *cadastral* surveying involving the mapping and ordering of land in legal, property terms. The commissioning of a postal or zipcode system through which each residential, business or governmental entity is given a unique address, is another such practice of making territory legible. This necessary *inscription* of reference system onto referent is, in essence, the practice of contemporary cartography. As ever, it is an intensely political practice – wrapped up in violent colonial mechanisms for re-defining and re-assigning land rights. Codifying and disseminating information on how exactly to interpret such a mechanism is critical to its uptake – enforced or otherwise.

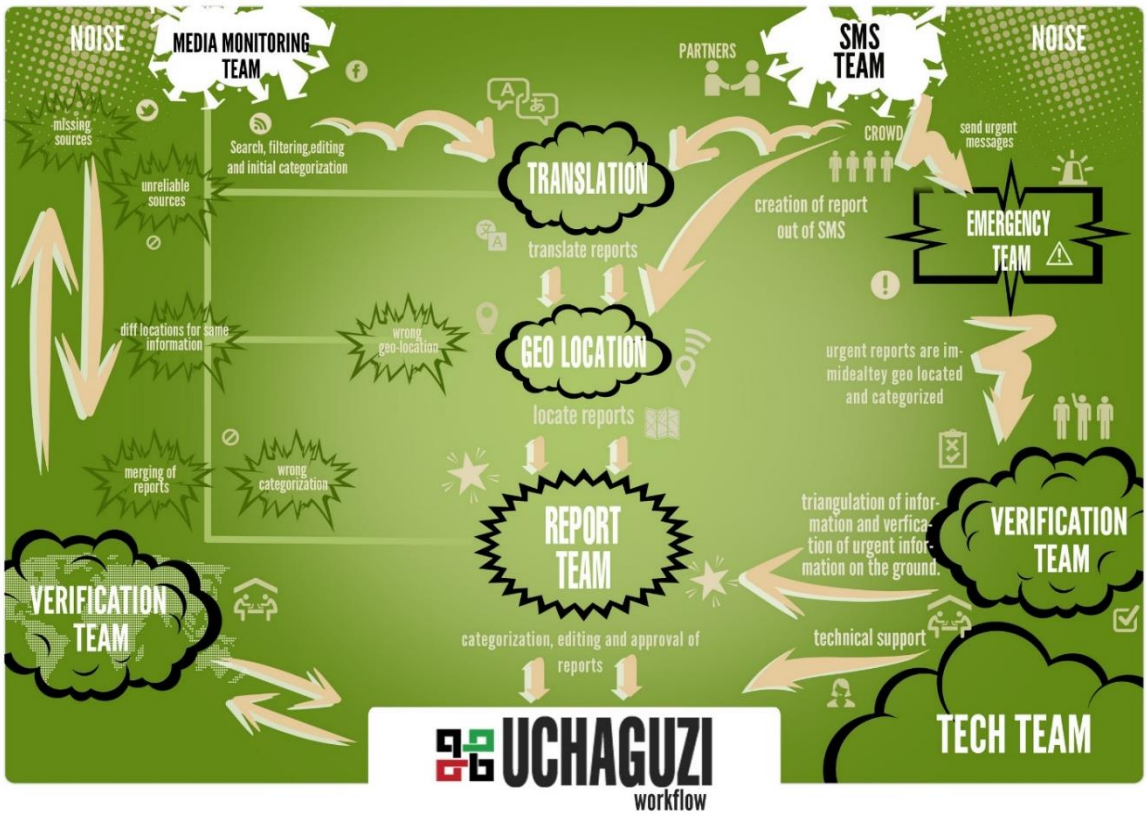


Fig 5.1 | Media monitoring workflow. Source: Uchaguzi (2013)

However, the same is just as true for the generation of event-based knowledges. Both an operative framework and an interpretative system must be devised in order for such practices to become normalized, contextualized, and universalized (Bittner et al. 2013, Mulder et al. 2016). One such example can be derived from the media monitoring of three Kenyan by-elections in 2012. This workflow is similar to one deployed by the Sukey team, and involves the schematic drawing of relations between various inputs, flows and outputs. In the Kenyan case, this comprised of: media monitoring and SMS teams (inputs), language translations, categorizations and edits (flows), and final by-election reports (outputs). In developing such an operative framework, the entirety of the system can be made legible not only to those responsible for processes within the system, but also to those reliant on it from 'without'.

This geographical process of 'making territory legible' requires the analysis of existing forms of (territorial) activity and the identification of possible fundamental units of operation (land registries, postal codes, etc.). In this, territory is not cast as a fixed neutral object but as 'the outcome of actions conducted toward it or some previously supposedly neutral area' (Elden 2013, 17). Moreover, that territory is conceptualized as 'itself a process, made and remade, shaped and shaping, active and reactive' (Elden 2013, 17). That this processual re-making and re-shaping occurs by virtue of event-based practices should be emphasized. Although, as Elden further contends, considering territory as a process rather than a neutral object is not simply enough, but must consider the assembling and dis-assembling of various techniques and elements that come to 'measure land and control and manage terrain' itself (Elden 2013, 17). As a final point, this legibility involves the development, dissemination, and subsequent unpacking, of the building blocks that go into capturing the event-based practice computationally – in this case navigational commands and spatial manoeuvres during a protest event.

Mobilizing Knowledge

The other epistemological moment through which calculable territory can be identified involves the *mobilization of knowledge*. In simple terms, it is the process through which the data captured by the inscriptive procedure outlined previously is 'put to work' or otherwise 'mobilized' for the purposes of territorial control. As Hannah suggests, once again in relation to the West German census boycott movement, 'this advance still depends to an important degree on the cooperation of individuals' (Hannah 2009, 69) through consensual compliance. However, this is not always the case. Although it may seem as if the difference between the surveillance and capture models, as detailed by Agre (1994), is between either the clandestine extraction of knowledge and the consensual, 'democratic' collection of data, this is actually far from the case. Indeed, this is where Hannah also falls foul of this distinction, making no mention of the way in which geographical order and forms of data capture can be violently imposed upon populations without any kind of 'cooperation'. Indeed, it could be argued that the majority of cartographic projects actually entail either coercive or clandestine techniques.

At the other end of the scale – besides consensual, coercive or clandestine methods – there is also *collaborative* capture. This is another way in which the notion of calculable territory should be thought differently. The nature of collaboration – i.e. the coming together of otherwise separate groups – demands a greater emphasis on non-state actors. Although state collaboration is of course possible (and indeed, prevalent in the form of territorial blocs and agreements), it also permits other kinds of collaboration between state and non-state, and also non-state and non-state. Collaborative capture involves the imposition of new ways of gathering data and formalizing activities that differ significantly from the others – most notably in the mutuality that is offered via this model. Event-based practices entail the generation of data from multiple, individualized sources (Elwood and Leszczynski 2012). This mutual agreement – whereby both or all parties gain equally from the relationship – is not present in consensual, coercive or clandestine operations.

Nevertheless, in all these cases – whether through consensual, coercive or clandestine capture processes – there is an imposition of a 'way of doing things' onto the individual and pre-existing activities. Although the method may differ, it necessarily involves a disruption of existing practices and an implementation of new, to-be-learnt ones. As Agre has argued, it is at this point that the grammar assumes a 'normative force' (Agre 1994, 110) outlining what the activity in question *ought to be* in relation to the now formalized model. I argue the Sukey platform imposed a new way of both navigating *and* accessing navigational knowledge previously impossible during protest events.

The first stage of this 'mobilization' therefore involves a mobilization of the abstract – an execution/prescription of the model – onto to the activity. In a cartographic sense this involves imposing the map onto – or in advance of – the territory itself in order to fully constitute it. The Twitter message parsing system, it also can be argued, is the primary mode through which protesters came to comprehend this geographical-infrastructural relationship between place, communication and delivery. The mobilization of knowledge requires a second part, however. Once the new grammar has been imposed onto the activity (whether through consensual, coercive or clandestine methods) it cannot sustain itself indefinitely without further instrumentation.

What is important to note here is how the mobilization of knowledge entails the deployment of 'political technologies' both in the narrow instrumental sense as demonstrated in Agre's capture model, and in the wider sense as theorized by Elden (2007, 2013). Put otherwise; how the latter conceptualization can help to re-consider the former as 'shot through with social practices of the "political" at every turn' (Rose-Redwood 2012, 301). Or even more appropriately to the case study, what Joe Painter calls 'networked socio-technical practices' (Painter 2010, 1096). We will return to these ideas later. Needless to say, this instrumentation is far from a technical, a-political stage, but conversely an intensely political one.

What connects these kinds of collaborative operations to consensual methods is that both require, and are built on, access permissions to be granted by each and every data provider. Digital, mobile 'app' culture is predicated on the gifting of access by individuals to various kinds of data modules within an electronic device such as a smartphone or tablet. These permissions include, but are not limited to: access to photographic and video files, access to Wi-Fi connection, access to a microphone, access to a camera, access to text messages, or access to GPS. In essence, any particular function within the device itself. Without the granting of these permissions the application is either unable to work at all, or severely restricted in its operation. Nonetheless it is this permissive logic that underpins the mobilization of geographic knowledge produced by digital, mobile devices – whether in consensual or collaborative modes. Coercive or clandestine methods involve a flow of data from one to another for the direct benefit of only one. Collaborative capture involves a *multi-directional* flow of data between one and the other for mutual benefit.

Between Capture and Addition

However, in returning to Joe Gerlach's (2010; 2014; 2015) work, introduced in chapter 3, it is now possible to say that generating 'ever-riskier' cartographies is ontologically impossible – as well as being ethically undesirable– as mapping necessitates the capture, calculation and ordering of geographical knowledge. Moreover, that mapping cannot escape imposing a grammar of action upon associated activities. In Gerlach's call for an ever-riskier cartography he demands that we think in more abstract terms about a) what mapping is and b) what ethico-political positions it manifests. These commitments are both ontological and epistemological in scope. Nevertheless, a call for ever-riskier cartographies denies that (a) necessarily relies on particular kinds of orderings, thus, compromising the intentions of (b).

In order to properly tackle this problem at the heart of Gerlach's claim, the concept of risk needs to be defined both in itself and in relationship to cartographic practice. His definition of vernacular mapping posits that

> …such [cartographic] performance[s] are not taken to be technologies of capture, but techniques of *addition*; of adding more to the riskiness of cartographic politics by proliferating yet more renders of the world. (Gerlach 2014, 23, original emphasis)

Whilst Agre (1994) is committed to a hermeneutic reading of the exact nature of information production, use, circulation and privacy in the digital age, Gerlach endeavours to take a normative approach, arguing that cartography is not simply a tool for capturing ever-increasing volumes of geographic data, but an abstract device to generating even more volumes of such. Vernacular mapping, Gerlach argues, does not exist as an extraction or a wrestling of geographical data *from* the world and *into* the map. Instead, it is said to involve a *proliferation* of data into the *world*, *through* the medium of the map. This non-representational approach directs attention away from the map itself – as object, as artefact, or as representation/image – and towards mapping practices. Otherwise, that maps 'are always *mappings*…constantly in a state of becoming' (Kitchin and Dodge 2007, 335, original emphasis).

Both capture (Agre) and addition (Gerlach) models are non-representational. That is, both contend that maps are ontogenetic in nature, 'of-the-moment', always remade and that 'mapping is a process of constant reterritorialization' (Kitchin and Dodge 2007, 335). However, in the capture model the attention is directed towards the production of the map itself, with the aim of ensuring a *relative* ontological security of the map itself. Whilst it is acknowledged that maps are ontogenetic in nature, it nonetheless attempts to impose a relative security through it. As Agre's (1994) model suggests: an order can be imposed on an activity through a grammar that, in turn, solidifies and strengthens the power of the grammar itself. But as further suggested by Agre, that process is never inevitable. In fact, there is often great resistance, the result of which leads to any

number of things: an improved observation, a redesigned grammar or – if the resistance fails – a reconstituted activity. The 'cartographic workflow' (making things legible, capturing, collecting, rendering, etc.) in such a situation would travel from world to map through the mapping production process.

In the addition model – the ever-riskier sensibility offered above – the attention is directed towards the world itself, and a multiplicity of renders of such. In this, Gerlach (2014) suggests, the aim is to ensure a relative ontological *insecurity* of the *world*, rather than a relative security of the map, *per se*. Yet the 'world' in this case is simply an array of possible practices affected by the imposition of the map on such. What we have here, then, is simply a difference in orientation at different points in the cartographic workflow. The difference between the capture model and the addition model is not a wholesale difference in a conception of the map itself or any mapping practice. They do not stand as competing models. They simply identify different stages in the mapping production and consumption process. In other words: all mapping practices entail capture and addition.

'Technologies of capture', instead of adding to the riskiness of cartographic politics, subtract from this riskiness. In other words, they minimize rather than escalate risk; seeking in some way to alleviate the possibility of any force destabilizing the security of the world it seeks to capture. The reasoning behind this can be found, of course, in the definition of capture itself – as discussed previously. To capture something involves isolating, restraining and incarcerating it. It involves a taking of phenomena from a wider environment and importing it in another space altogether. Only through capturing these unruly moments, activities, borders, peoples or spaces and implanting them into a calculated, curated and managed space are their unpredictable qualities minimized. In so doing, according to the logic of vernacular mapping, the *quality* of the world is dramatically reduced and opportunities restricted. In order to comprehend what technologies of capture might actually entail from a risk perspective we need to unpack the concept itself.

Anticipatory Carto-logics

Risk itself is an orientation towards the not-yet-happened. It is at once a technology, a quality and a calculation through which we assign particular forms of value to a future event. Yet this future event cannot be known entirely, or perhaps, not even identified in the first place. It is elusive. This uncertainty – of what possibly lies ahead – is the essence of risk. Yet there are different modes of risk, and Amoore (2013) suggests one of these is replacing another as the more dominant force in contemporary life. As she explains:

> …the mode of risk that is flourishing across the horizons of contemporary economy and security operates according to a *possibilistic logic*. It does not deploy statistical *probabilistic calculation* in order to avert future risks but rather flourishes in conditions of declared constant emergency because decisions are taken on the basis of future possibilities, however improbable or unlikely. (Amoore 2013, 12, emphasis added)

This possibilistic logic is different from a probabilistic one, Amoore suggests, because rather than seeking to avoid future risky events it actively works across its terrain to simulate, model and manage it. Through this possibilistic logic

> …it acts not strictly to *prevent* the playing out of a particular course of events on the basis of past data tracked forward into probable futures but to *preempt* an unfolding and emergent event in relation to an array of possible projected futures. (Amoore 2013, 9, original emphasis)

In other words, it feeds off the uncertainty of the future event rather than treats it as an undesirable quality; playing with it rather than isolating it. There are two moments at which, according to Amoore, the probabilistic mode has comes undone in recent times: 9/11 and the 2008 financial crash. 'Together', she suggests, they 'signal the limits of insurability and, therefore,

the limits of modern forms of risk calculation' (Amoore 2013, 8). This is the death, it is argued, of the probabilistic mode, through which it has been shown that exceptional events – 'a terrorist attack, flood event, hurricane, pandemic, or financial crisis' (Amoore 2013, 9) – cannot ever be predicted. The reason for this is that probabilistic logic works according to 'a complex set of exclusions, exemptions, and exceptions' (Amoore 2013, 8) that seek to isolate the apparently ungovernable and unpredictable; these so-called exceptional events. In so doing, they remain entirely outside of the predictive logic, remaining 'off the radar' and outside of calculation. Any actualization of the possible event, therefore, is unpredicted and unscripted. They are, in market terms, 'externalities'.

The possibilistic logic works differently. As mentioned above, it feeds off this uncertainty. Exceptional events become, not unpredictable and uninsurable happenings, but entirely 'workable' and calculable occurrences. 'What matters' is not even that past events become predictions for future happenings, but, instead, that there is a new found 'capacity to act in the face of uncertainty, to render data *actionable*.' (Amoore 2011, 29, original emphasis). This is concomitant with a shift to a 'small p' logic.[8] This is not a transition to a similarly exceptional logic driven by the grand narratives of terrorism and economic failure, but one informed by quotidian dynamics of interrogation, exposure and doubt, that operate through the 'most mundane and prosaic spaces' (Amoore 2009, 49). This is due to a wholesale reconfiguration of the art of governance more generally, entailing both the embrace of 'differential degrees' (Amoore 2013, 8) of identification and the uptake of new management techniques and technologies for the purposes of *anticipating* future events. It is as much a shift in scale as anything else.

The first of these is linked to Gilles Deleuze's (1992) concept of the 'dividual'. Here, the human subject no longer simply exists in a relation between 'mass' (public) and 'individual' (private) but

[8] In the same sense of differentiating between 'big C' Conservatism and 'small c' conservatism, say. Here there is a difference both in form and in tone; between institution, philosophy and practice.

the latter is infinitely divided up into other categories, becoming 'a fractioned subject whose risk elements divide her even when in herself' (Amoore 2013, 8). Common characteristics of identity such as race, class, ethnicity, gender, nationality, dis/ability and facial features are cross-cut with other dividuated risk factors such as telephone records, credit card transactions, social media activity, travel ticket purchases and other such traces that comprise the dividual. In essence, this is the rise of the calculable self. It is at the border of the contemporary nation-state where we see the dividuated subject manifest itself most acutely, at which 'sovereign decisions on the borderline…simultaneously dissects bodies into granular degrees of risk, such that mobile subjects are inscribed with, and carry with them, plural encoded borderlines' (Amoore 2013, 82). This 'dissection' and 'inscription' of the human subject in such instances is the hallmark of the contemporary fight against 'terrorism'; undertaken most vigorously, of course, by border agencies the world over. Each dividuated dimension or trace is pored over for value as derived initially from a presence of doubt.

Yet the dividuating process does not isolate these various strands of the human subject, but necessarily overlays and intersects them with each other to form what Amoore (2013, 84) calls 'mosaic lines'. As such, the dividuation entails two types of lines: the incision and the trace. The former separates a whole out into parts, whilst the latter is a record of an activity or performance. Once the incision is made, the tracing can begin. When overlain or intersected with other such features, the dividuated features form a weave with other such phenomena. The difference between pre- and post-9/11 was that these associative calculations could not be carried out *in advance* of any event, only performed after such in order to identify the plane hijackers. In other words, that 'the relationship between two fragments of commercially derived data – an airline reservation and a credit card record – [can] become a condition of possibility for *preemptive* security intervention.' (Amoore 2013, 86, emphasis added). The shift, then, is a temporal one based on the anticipatory necessity of carrying out such forms of analysis *before* the events

actually manifest themselves, in order to (a) preempt and (b) ultimately prevent its happening (see; Anderson 2010).

As such, the logic of possibility strikes up a peculiar and particular relationship between the past, present and the future – working across the terrain of all three at once. It does so through the development and deployment of yet-more novel technologies throughout the 'diverse worlds of risk management consulting, computer science, commercial logistics, and data visualization' (Amoore 2013, n.p.) as well as, of course, global security – whether in state or private forms. Indeed, it is within these non-governmental worlds – as much as within state research departments themselves – that we have seen the growth of such technologies and strategies. As Nathaniel O'Grady (2016, 81) suggests, '[e]ngendering anticipatory forms of governance requires new temporal arrangements to coordinate the calculative practices by which…risk is made sense of'. Rob Shields' (2003) *The Virtual* provides a handy conceptual guide to the relations drawn between the past, present and the future in this possibilistic mode of risk. In it he suggests that 'risk is always more than concrete danger and calculations of probability because of the importance of perception and understanding as ingredients in risk assessment' (Shields 2003, 185). As such, calculating risk (in the possibilistic sense invoked by Amoore) involves taking into account both future actions and other less concrete elements.

The first of these, in Deleuzian terms, is called 'the virtual'; that is to say, the not-yet-happened rather than the more common definition as the opposite of the real (as in 'virtual reality'). Its digital manifestation involves the production of what Nunes (2006, 11) calls 'virtual topographies' which are 'virtual to the extent that they provide conditions of possibility for an arrangement of materiality and semiotic structure through the (re)orderings of lived practice' (Nunes 2006, 16). In short, 'the performative conditions of possibility' (Nunes 2006, 17) that a digital world entails.

The second is what Shields (2003, 29) calls 'the abstract'; that is, narratives and ways of thinking that affect the calculation of risk, such as notions of trust (the 'ideal' yet real) or wider security

discourses (the ideal yet possible). Neither aspects (virtual, abstract) are tangible, 'actual' things, yet both comprise the horizon of the concept of risk, playing a part in defining the scope of any possible threat or future event. The actual and the virtual combine to form 'reality' as we understand it – necessarily comprising of past, present and future orientations. The actual is the 'now' of actions and occurrences (albeit as a milieu of temporal instantiations); the virtual, *possible* actions and occurrences to come. This 'tetrology or risk and security' (Shields 2003, 195) is reproduced on the following page.

In digital terms the virtual comprises the horizon of calculable possibility. It is not, therefore, a dematerialized cyber-world in opposition to the material non-digital world. The virtual is, on the contrary, a not-yet realized space with the *potential* to be actualized and brought into 'reality'. Yet it is no less actual for this lack of now-ness. It is also no less material for its virtuality. As Shields suggests, these virtual components still affect decision-making in the actual; despite the 'invisibility and intangibility of virtual risks and abstract threats' (Shields 2003, 197). They not only shape and re-shape the perception of risk, but also the execution of calculable practices whether these be logistical, visual, managerial or some other kind of digitally-routed practice.

	Real (*existing*)	**Possible** (*non-existing*)
Ideal	Feeling of security	'Security' in general, as a business
	Trust	Representations of risk as threats
	Virtual risks	'Urban myths'
Actual	Being physically safe	Being 'at risk' (probability of danger)
	Danger	Risk

Fig 5.2 | 'Tetrology of risk and security'. Source: adapted from Shields (2003)

Although Shields is keen to identify a general 'risk culture' made up of a 'synthesis of the various modalities of risk' (Shields 2003, 204), Amoore considers the most prominent one: the possibilistic mode. Moreover, it is presented as serving just one discourse, of sovereign state politics – albeit the result of the coming-together of various other worlds from risk management consulting to commercial logics. Yet throughout this and previous chapters the conceptual aim has been to define a particular disruptive cartographic politics without direct recourse to state practices. The next section of this chapter will seek to prove that the possibilistic mode of risk is not a sole logic of the state but one defined in relation to the ontological nature of digital technology. Disruptive cartography, it shall be argued, also operates through this possibilistic mode, by exercising an anticipatory carto-logic that 'aims to prevent, mitigate, adapt to, prepare for or preempt specific futures' (Anderson 2010, 779).

Risky Territory

Now it is necessary to return to the concept of territory and the digital mapping assemblage itself. The reason for this is because disruptive cartography is premised on the management of risk itself through a kind of extra-state arrangement. As I have contended, mapping involves *both* the capture and addition of geographic data in, and into, the world. In this final section I supplement this argument by turning to Valérie November et al.'s (2010, 581) notion of 'risky territory'. In short, it describes the entire mapping process – from production to consumption – emphasizing the role of the 'navigational platform' (November et al. 2010, 583) in new digital mapping assemblages. That is, the role of both the computer database and the interface in shaping and regulating the practice of cartography.

November et al. (2010) are explicit in detailing what I will call 'correspondent risks'; phenomena that stand between the successful and unsuccessful mapping of territory. Although this may seem as though it is a slight gesture towards an appreciation of the degree of violence inherent in the

capturing and utilization of geographic data, there is no intention to expand on this in an ethico-political way, akin to Agre (1994). The conception of risk that November et al. (2010) utilize is a pragmatic one, more intent on documenting the tasks navigators are instructed to proceed through in order to find their way. As such, the 'correspondence' is not a (static) resemblance between map and territory, but a (processual) correspondence between reference points. Whilst

> …the first seems to rely on a *resemblance* between *two* elements (signs on the map and territory, or more philosophically words and worlds)…the second emphasizes the establishment of some *relevance* that allows a *navigator to align several successive signposts along a trajectory*…Both are depending on correspondence, but one engages the mapping impulse into an impasse…while the other allows one to move away from it and deploy the whole chain of production that has always been associated with map making… (November et al. 2010, 586, original emphasis)

The correspondence, therefore, is a different one from the usual suspect encountered in critical cartography. Instead of a mimetic reading it is a navigational one. Important, of course, is the way in which November et al. (2010) define such risks. In short, they are 'obstacles' (November et al. 2010, 587) that require circumvention in the act of navigation; things that get in the way during 'courses of action' (November et al. 2010, 582). It is this quotidian, pragmatic conception of risk that drives November et al.'s (2010) intervention. In this there is no reference to the state, no reference to institutions, no reference to the expert and no reference to the amateur. Each navigational act – comprising of a series of interconnected alignments – is therefore on a par with another. It is this ontological parity lies at the heart of a disruptive cartographic endeavour.

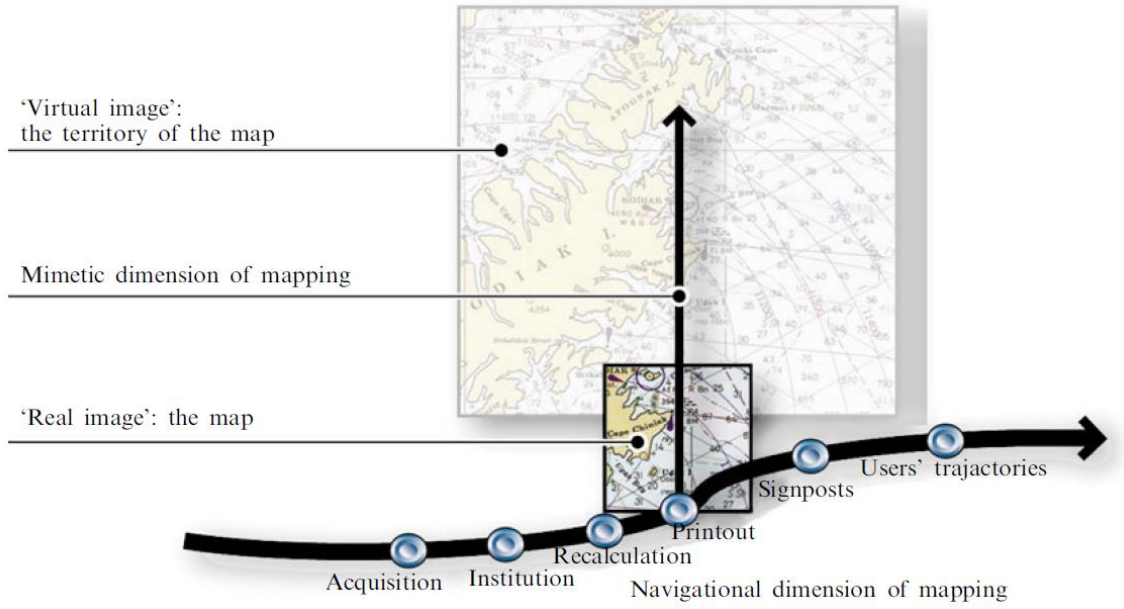


Fig 5.3 | (Digital) navigation. Source: November et al. (2010)

Such risks – that is, obstacles in the way of successful navigation – are characterized neither as subjects or objects but as 'quasi-objects' (Latour 1993, 51–52). As a result, one can say that 'reefs, buoys, tidal information, algorithms' (November et al. 2010, 587) and other such phenomena can equally pose a risk – regardless of their position either side of the supposed line as either objective realities or subjective interpretations. In this, the conceptualization of risk morphs into a slightly more Latourian beast than we have so far encountered in the work of Joe Gerlach and Louise Amoore. In this re-conceptualization of expressly cartographic risk the separation between the base map and the overlay is erased. In November et al.'s (2010) marine analogy they suggest that:

> There is no reason to think that reefs pertain more 'naturally' to the base map and are any closer to the fundamental layer and that risks should be added like more superficial layers on top of the first. We want to reconsider the mapping impulse so that reefs and risks belong equally to the definition of 'territory'… (November et al. 2010, 582)

As such the notion of territory is dramatically widened to include a host of calculative events that neither comprise an objective 'out there' reality (as the base map supposes), nor a subjective 'in

here' interpretation (as the overlay suggests). Nowhere is this more apparent than in a protest environment where 'risks' present themselves as an intertwining of both. Indeed, November et al.'s (2010) navigational interpretation of maps tessellates rather well with the notion of the 'mapping moment' (Dodge et al. 2009, 234) discussed in chapter 6. In essence the mapping moment straddles the 'printout', 'signposts' and 'users' trajectories' stages of the model, incorporating any provisional cartographic output, the alignment of artefacts and the situated activity for which the map is deployed.

November et al.'s (2010) definition of navigational mapping does not suppose there is, or can be, a 'complete representation of the territory' nor a mere 'explication of the plot', but rather a partial and precarious passage strewn with hybrid risks. As the authors attest to, the establishment of such relations is a treacherous endeavour. Once again, their marine analogy is best at painting a picture of this risky procedure:

> Now the navigator tries to establish some relation between some of the features on the map and the warnings shouted at her from the cockpit by her team members whose views are made fuzzy by the sea spray, their voices covered by the roar of the waves, and their hearts excited by the heat of the race. Even if she had learned her Descartes by heart, she would never fancy for one minute that the skipper and the crew live in some 'outside world' that would resemble the geometric one she is looking at; too many features would not obviously *fit in* this geometrical world: the spray, the waves, the heat, the excitation of the treacherous landscape, the skills of the maneuvers. But it would be just as wrong to believe that the navigator, because she is down in the cabin looking over the map tracing their tacks on paper with ruler and compass, resides 'in' a geometrical space (November et al. 2010, 585, original emphasis)

As November et al. (2010) argue, navigation is anything but a smooth, pre-calculated endeavour – even with the appropriate technologies and the ability to 'plot a course even before setting out'.

Mapping is precarious. Whilst the digital map may aid in the anticipation of future events, it does not do so with this future presupposed. It is this riskiness that November et al. (2010) identify as central to the maps-mapping-territory relationship and that which Joe Gerlach argues should be a normative demand. Risk, it should be said, is the central pivot of any disruptive cartographic project. Fostering or minimizing these risky elements is thus both an ethico-political (Agre 1994; Gerlach 2010, 2014, 2015) and a pragmatic (November et al. 2010) tension at the heart of it. Whilst an episode of 'noninstitutionalized disruption' (Scott 2012, xvii) may conjure up the dissolution of order, as well as the collapse in correspondence between signposts in the process of navigation, in a cartographic sense it rests on both an ordering and continued correspondence. Between capture and addition; geographic data-collection and navigational use; risk and safety.

Conclusion

Introducing an entirely new concept in the form of 'disruptive cartography' may itself seem risky business. The theory of mapping is littered with many such terms referring to all manner of tactical, radical or counter-cartographic efforts. In order to justify the development of another it has therefore been crucial to clarify some points regarding its necessity.

In chapter 2 I detailed how an array of spatial manoeuvres witnessed during student and anti-austerity protest events were a direct response to a police tactic known as kettling. This has been indicative of a shift to more mobile forms away from A-to-B style demonstrations. In chapter 3 I then argued the art and state of 'disruption' was a critical dynamic of these manoeuvres – with activists and police working to minimize or maximize it at various times and in multiple places. But disruption is a precarious, often dangerous thing that requires the careful management of bodies, spaces and resources. What this chapter has sought to do is provide a conceptual framework for understanding these practices. It proceeded in a number of stages.

The first task involved exploring the nature of calculable territory. Few studies have done so without reference to the sovereign state. Yet an ever-growing number of extra-institutional actors partake in a calculation of territory on an ongoing basis. Moreover, many of these endeavours have entailed the deployment of digital platforms, the execution of digital calculations, and the production of varying forms of digital data. This includes activists engaged in the live mapping of protest events.

Then, it suggested that greater attention needed to be paid to 'event-based knowledges' (Hannah 2009, 68), of the kind produced repeatedly during protest events, such as navigational information regarding the location, direction and strength of police containments. These event-based knowledge practices comprise of two particular stages: the making legible of territory and the mobilization of knowledge. Without either the production and circulation of navigational information during demonstrations remains unrealized.

At the heart of cartographic disruption, however, is a necessity to manage risk. Activist efforts to map the protest terrain follow the same 'anticipatory logic' (Anderson 2010, 792) as state border officials use in their efforts to apprehend individuals in advance of terrorist attacks. In other words, they attempt to calculate future activities on the basis of possible outcomes rendered through digital data capture and processing. Yet they do so with a greater emphasis on collaborative data-collection and the generation, rather than minimization, of disruptive activities.

Although calls for 'ever-riskier' (Gerlach 2014) cartographic practice are not to be dismissed they must still be re-articulated as one side of the coin. Whilst a rallying cry for more expansive, explorative mapping engagements they nonetheless normatively over-state the possibility for riskier practices. Put otherwise, a tension exists between riskier and securitizing forces that can never wholly be resolved. The erasure of the tension between risky and 'safe' cartographies is therefore ontologically impossible. The success of every cartographic project lies the management of this tension.

Establishing the nature of this tension is therefore a central task if we are to consider how disruptive cartographies operate in a digital world. In order to cope with the tension between choreographing expansive, un-capture-able practices and securing spatial phenomena, disruptive cartographies rely on anticipating future activities. This logic allows for 'risky territory' (November et al. 2010, 581) to be appropriately managed and, ultimately in this case, made navigable. This 'virtual', un-actualized state, in the Deleuzian sense of the term, is the plane across which such cartographic calculations are made. Disruptive cartographies rely on these future-oriented, anticipatory efforts in order to generate and circulate navigational knowledges during protest events.

The next chapter provides a metaphorical roadmap for these conceptual elements to be explored more thoroughly.

Chapter 6 | Methodology

In the following chapter I detail the transition and translation from the conceptual framework I have formulated – that of disruptive cartography – to the empirical instantiation of it. The subsequent section will begin with a discussion of the general methodological framework I wish to employ, based on an automotive metaphor, along with a detailing and justification of the case studies and sites selected. The metaphor is a framing device deployed in order to emphasize the assembled nature of the digital map. The metaphor has three parts: the 'engine', the 'windscreen' and the 'wheels'. Each of these, I argue, focus on the different, yet interrelated elements of the mapping enterprise. None are elevated above any other, but exist as part of assembled network to feed into the rest. In order for the navigational assemblage to work as described, all three parts must be functional.

Yet, like any vehicle, the parts of this methodological framework must be assembled. Here there is a longer history – not of the mapping platform itself (this is reserved for chapters 7, 8 and 9) – of how the platform came to my attention. Further, of how it came to fit into, or in relation to, a number of other activist mapping projects. Along the way there were a number of 'unexpected diversions' leading me along a path I had not intended to take. Yet, in so doing, the project took on a new life, encountering new terrain I had not expected to discover. This is why the background and scope of the thesis deserves initial attention.

Then, I will take each part of the metaphor in turn on approaching the 'final destination'. Starting with the engine, I detail two extended interviews carried out with key developers and strategists of the platform. I then go on to discuss the textual analysis of cartographic and non-cartographic material produced during the project. Then I continue to the windscreen to detail the interviews carried out with student activists after the demise of the platform. These I call 'second-wave' or 'post-9k' student activists who have taken to the streets at protests both after Sukey's death, and

after (rather than before) the introduction of £9,000 HE tuition fees. In the final part of the metaphor – the wheels – I focus in on two protest events in which I deployed 'mobile methods' (Hein et al. 2008; Buscher and Urry 2009; Merriman 2014) to explore the navigational nature of each. As part of this, I discuss the nature of visual research practice and the necessary ethical commitments that are part-and-parcel of research into new digital technologies and activist engagements.

In the final part of each section, I discuss the process of analyzing and interpreting the material produced during the empirical stages of this research. As Law (2004, 122, original emphasis) suggests, 'method assemblage is the process of enacting, or *crafting* bundles of ramifying relations'. It is this crafting I wish to expand on now.

Framework

As Lakoff and Johnson (2003, 6) suggest, '[t]he essence of metaphor is understanding and experiencing one kind of thing in terms of another'. Thus using an automobile metaphor as a methodological framework to understand the digital mapping assemblage is a logical manoeuvre – both are socio-technical arrangements enabling cognition, calculation, vision, navigation and movement.

The modern motor vehicle comprises of three primary entities that, when working together, come to act as the vehicle itself. Separately these are: the engine, the windscreen and the wheels. Whilst there are evidently considerable other components that comprise a car (the chassis, exhaust, seats, etc.), and thus more fully furnish the metaphor, not all come into play when considering a digital mapping assemblage. At least, not easily. Further, the risk is that in pushing the metaphor too far one reduces its utility in describing the thing itself. Such work requires, as Marianne van den Boomen (2014, 14) would suggest 'a precious balance between, on the one hand, being able to recognize the…compressed metaphoricity that stands in for a complex dynamic machinery, and

on the other hand, being able to forget this, that is, reify the metaphor and take the thing in itself'. The car engine, windscreen and wheels may be a metaphorical device but it is one that I argue possesses an articulative power nonetheless.

Whilst all interconnected by necessity, each has its own distinct function. The engine is, of course, the main source of power in the vehicle and as such 'drives' its forward motion. The windscreen not only enables the driver (and passengers) to garner visual knowledge out of the front, back and sides of the vehicle but also prevents objects from flying in and out. However, the power generated in the first, and the vision afforded in the second, is entirely useless without the third of these assemblages – the wheels. Without a way in which to transfer power from the engine to secondary objects capable of smoothly propelling the mass along, the vehicle fails to move at all. Although a chassis keeps all these elements in place and other such objects ensure individuals are safe, movement is economized, and key mechanical and electrical components are safely secured, it is these three – the engine, the windscreen, and the wheels – that are absolutely crucial to the motor vehicles functioning as exactly that.

Studying the deployment of mobile, digital mapping technologies within any situation is not dissimilar. In fact, the metaphor allows the above functions in a motor vehicle to be easily translated into a cartographic protest scenario. It also enables us to think about the multi-sited nature of mobile, digital mapping technologies. As with the modern motor vehicles, it is critical to consider how power, decision-making, and vision become distributed throughout the assembled parts and across these interrelations.

Under the bonnet, the **engine** provided the capacity to power the whole enterprise. For this reason, I scrutinized the material platform features and aesthetics, whilst conducting interviews with Sukey developers and strategists. Both cartographic and para-cartographic features were critical to powering the navigational engine. Much of this material was produced with reference to the platform's ludic aesthetic. Further, decision-making – on what the platform was designed

to facilitate, how it would be built, what its emergent limitations were – resided with those leading the enterprise. In short, they provided the 'fuel' for the engine. Only a small number of individuals were responsible for developing and operating the system, with even fewer responsible to plan for future engagements. To continue the metaphor, then, it was only these individuals who had a tentative grasp of the correct 'air-to-fuel ratios' to enable effective and efficient combustion. It follows from this that the map and the mappers act as part of a cartographic engine *in the world*, rather than a cartographic window *onto* the world.

The **windscreen** affords an insight into how people navigated through particular kinds of protest spaces. What kind of visual capacity did and would a mobile, digital mapping platform afford during an anti-austerity or student demonstration? Although the windscreen affords the user visual insight this is a relational process between phenomena and body through which calculative, decision-making practices are performed. As an interface, the windscreen 'affect[s] the way the world is perceived and sensed' (Andersen and Pold 2011, 11), and it is, as Raskin (2000) and Farman (2012) both suggest, an interface amongst many in the motor vehicle. In its absence, what does the visual affordance look like now? Whilst the windscreen is also as much for protection as it is from vision, how did the platform (or its absence) aid or hinder this ability? Moreover, what replacement if any has been sought to re-circulate the necessary visual, navigational knowledges produced during the period from 2010-2013?

Whilst every engagement with a digital map entails the mobilization of these three assemblages, it is within a protest event that particular bits of these elements rise to the surface and can be scrutinized more easily. Whilst information on the intended use of the platform can be gathered from discussing plans, strategies and dreams with the developers and other associated parties, the actual use can only be ascertained from scrutinizing the instantiations themselves. Thus, it is during a protest event that the **wheels** of the enterprise can be explored more thoroughly – the very manoeuvres that were performed in and through the protest space by activists on foot that

came to be mediated, generated and facilitated by the mobile, digital mapping platform. The 'wheels' in this case, were the hundreds and thousands of steps taking by protesters as they walked, marched, jogged, ran and sprinted through the city streets – a 'mediated pedestrian mobility' (Laurier et al. 2016, 1) as aided by a navigational assemblage. Without the right kind of cartographic force provided by the 'engine' of maps and mappers, and lacking any 'windscreen' for users to sense, calculate and respond to phenomena, the 'wheels' inevitably resulted in the protesters drifting, taking wrong turns or ending up impounded.

The benefits of this tripartite system are manifold. In setting up the case study arrangement with three differently oriented elements, the focus is diverted away from a representational focus on the map itself and towards the wider navigational assemblages that work to produced, validate and refine the map. Thus it ensures that otherwise 'elusive objects' (Law 2004, 86) or actors in any such cartographic endeavour are properly accounted for. It also allows us to focus on the array of decisions that go into the production and ongoing re-production of any digital mapping enterprise. As will be explored, Sukey went through three defined versions based on various updates, tweaks and changes. These were dependent not only on technical possibilities and constraints but also on labor capacity, the dynamics of the event, and emergent and intransigent ethico-political issues.

Unexpected Diversions: Background and Scope

However, the project set-off long ago, with the research beginning in 2010 during a Masters' degree in GIS. At the time there was a growing student movement against a planned rise in HE tuition fees – as discussed in the introduction and chapter 1. It culminated in the passing of a parliamentary bill that would legislate a rise from £3,290 to £9,000 a year. During planned demonstrations a mobile phone application was launched to enable students to stay safe during the protests – avoiding police containments and other such dangers. At the time, I was beginning

to become interested in the rise of new mobile, digital mapping technologies and so wanted to get in touch with the developers. Luckily, a student on an undergraduate course at the university knew one of them and put me in touch. In the summer of 2011 I interviewed him on the UCL campus where occupations against the bill were first orchestrated. Much of the planning and organization of the subsequent student demonstrations occurred in and around UCL, becoming the *de facto* HQ of the nascent 'anti-9K' student movement.

In the year after, I continued to follow the Sukey project as well as the various other spin-off projects that members of the team became involved in: Occupy London, Hurricane Hackers, Sukey New York. In 2012, as a new, updated version of the Sukey platform went live, I responded to a public call for live testers. As a result, I established contact with another member of the team who had become the main developer of the new version. From there I began to have an email correspondence regarding the use of the platform for a particular anti-austerity demonstration in October 2012. In the days leading up to it, I received a phonecall from the same individual regarding my set-up for the event (device, battery, etc.) and tips on what might be useful to record in order to help improve the service for future deployments. After the event I responded via email with a variety of comments. These included: a note on a particular error message I kept receiving whenever I loaded the map ('geolocation error: timeout'), a suggestion that submitting information via Twitter rather than the 'in-app' upload function was both quicker and easier, a suggestion that different map layers might aid navigation, and that although the switch to using OSM over Google Maps was better, I 'did think the zoom buttons were a little small'.[9]

Although I'm sure these comments were well-received, I had no immediate reply. After being sent an invitation to a CryptoParty[10] in London in December 2012 I had no further direct

[9] Personal email communication, October 22nd, 2012.

[10] 'CryptoParty is a decentralized movement with events happening all over the world. The goal is to pass on knowledge about protecting yourself in the digital space. This can include encrypted communication, preventing being tracked while browsing the web, and general security advice regarding computers and smartphones.' (CryptoParty 2016, n.p.)

communication with the individual or any other Sukey developers. During this time, I doubted whether the research project could continue at all. To compound this anxiety, I attended an academic conference in London in April 2014 at which the same developer was speaking. During the talk they proceeded to tell the audience that the project was, for want of a better term, dead. At this point my doubts were confirmed.

This was the primary reason that the scope of the research project was expanded, and two particular exercises were undertaken. Although it was always to involve a multi-sited approach taking into account the 'engine', 'windscreen' and 'wheels' of the mobile, digital mapping enterprise, I now decided to include other foci besides the platform itself that would aid in grounding and connecting this main case study. Like much of my initial scoping I came across one possible new site online. During March 2014 I saw a link to a forthcoming exhibition entitled 'Disobedient Objects' due to be held at the Victoria & Albert Museum (V&A) from July 2014 – February 2015 on 'the powerful role of objects in movements for social change' (V&A 2014, n.p.).

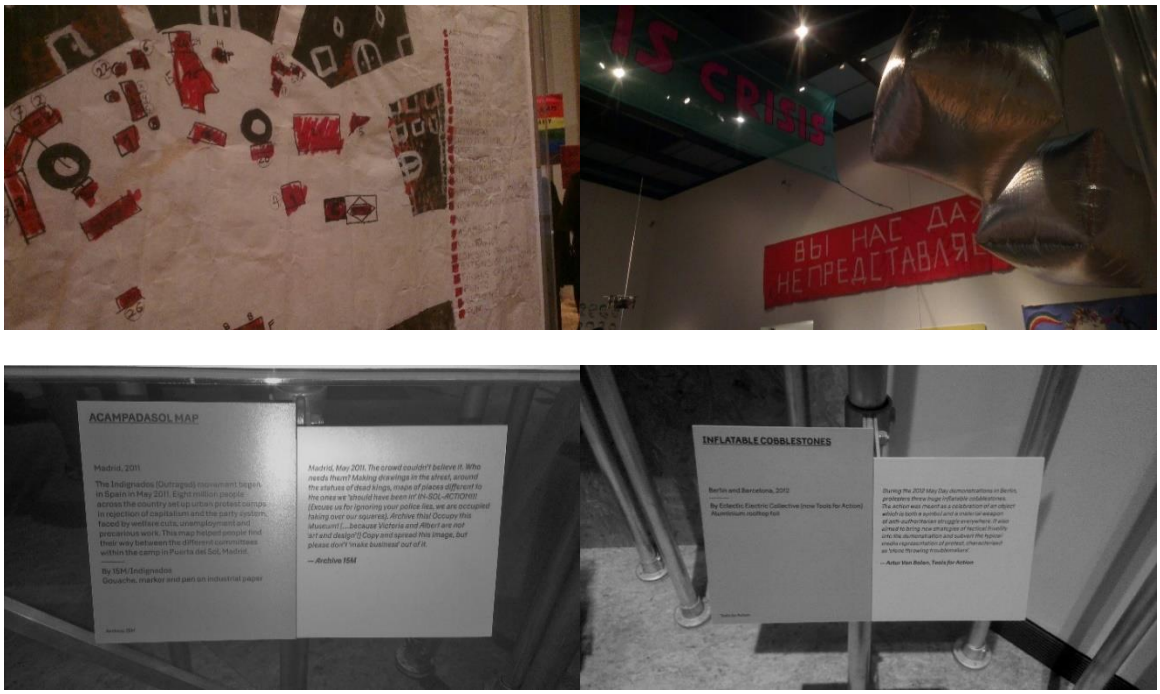


Fig 6.1 | Disobedient Objects exhibits

As I blogged at the time, it was these objects – from banners to barricades – that I thought comprised the '"augmented reality" of protest events', allowing 'protesters and activists to test the limits of opposing forces' whilst operating as 'tactics for expressing beliefs' (Hind 2014a, n.p.). It was this 'augmented reality' that I wanted to explore in more detail in order to understand how the digital map enrolled itself into much wider navigational and activist assemblages in order to affect change during protest events. As a result of this discovery, I endeavoured to visit the exhibition on multiple occasions in order to comprehend the kinds of objects on display, their own impact on navigational and activist assemblages, and their ability to affect change both in and out of protest events.

On these occasions, I took a large number of photographs of the exhibits and their descriptive labels. The aim for these visits was to establish a general milieu in which the digital mapping platform might sit. Many of the objects and projects included in the exhibition contained a cartographic, navigational or wayfinding element or purpose to it. Others still were disobedient objects for deployment within the type of protest event I wished to explore. An example of the former included the 'Acampadasol Map' created to help 'people find their way between the different committees within the camp in Puerta del Sol, Madrid' (see image above) during the height of *15M* in 2011. An example of the latter included a pair of 'inflatable cobblestones' made from aluminium rooftop foil as used by protesters during May Day demonstrations in Berlin and Barcelona in 2012 (see; Hind 2015a, n.p.). Those that were selected for their cartographic, navigational or wayfinding features went through preliminary analysis for their significance, relevance and relation to the primary case study. Aspects of their operation, execution and design were noted whilst in the gallery space itself and built on afterwards with the aid of photographs captured at the time. The reason for this initial exercise was to establish the boundaries for the investigation; what kind of movement does the platform generate? Is this especially new or novel? Have previous and/or non-digital objects or tools done similarly? This exercise was critical for establishing the uniqueness of the mobile, digital mapping platform under scrutiny.

Fig 6.2 | 56A maps

During the summer of the same year I also stumbled across an article written by activist-scholar Rhiannon Firth (see; Firth 2014) based on research carried out at the '56A Infoshop'. 56A, as it is colloquially known, is a social space and radical archive in Southwark, south London. Amongst its many books, pamphlets and other ephemeral material on a multitude of radical political subjects lies a map archive called The Map Room. Although in reality The Map Room is a large chest of material it is no easier to navigate for it. Inside there is an array of physical maps, plans and guides covering local radical histories, plans of festivals and camps, as well as future maps comprising of dystopian and utopian visions of London and elsewhere. Inside the chest there are also some familiar and well-known counter-maps including those designed by Hackitectura and the Loiterers Resistance Movement. Many of the maps within the archive are also derived from a 2005 festival entitled 'You are Here but Why?' in which members and associates of the infoshop hosted a 'Free Festival of Mapping' (56a Infoshop 2011, n.p.). The physical remains of various cartographic exercises performed on the day are deposited in The Map Room.

Of particular interest within the collection was a series of protest maps designed and distributed for anti-capitalist actions in London over the last 15 years. The two most famous of these are the 'Squaring up to the Square Mile' map produced for the J18 event in the city of London in 1999, and a similar 'Weapon of Mass Construction' map produced as an 'action guide' for the 2003 May Day protest. Both of these maps highlight the location of capitalist enterprises ranging from merchant banks and exchanges to law firms multinational head offices. On both occasions their

production and dissemination lead to considerable fear amongst the police and businesses that particular locations would be targeted by activists during these events (Hind 2015b). These maps were the closest physical, non-digital manifestations of the Sukey platform. As a result, they provided a relatively direct antecedent example of its tactical efficacy. Much like the visit to the disobedient objects exhibition, scrutiny of these protest maps within The Map Room archive provided the basis for thinking about the connections to previous disruptive cartographic endeavours. As such they were both integral to understanding the main case study sites.

		Site	Dates	Location	Theme	Features
Scoping		Disobedient Objects exhibition, V&A	November 2014, January 2015	west London, UK	Non-cartographic, playful	Sprawling, global focus; pervasive DIY ethic; notable digital objects + projects
		The Map Room, 56A Infoshop	November 2014	south London, UK	Non-digital, activist	Many conceptually-driven; localized political efforts; iconic protest maps
Cases	**Engine**	Developer interview (developer X)	February 17th 2015	Mainland Europe; online	Decision-making, design, ethics, future	Original designer and programmer
		Strategist interview (strategist X)	May 3rd 2015	Washington DC, USA	Strategy, design, failure	Later involvement, advice + future possibilities, pragmatic
	Windscreen	Student activist interview I (activist X)	December 2nd 2014	University campus, UK	Practice, risk, navigation, knowledge	Involved locally, took more 'risks'
		Student activist interview II (activist Y)	February 24th 2015	University campus, UK	Practice, risk, navigation, knowledge	Involved nationally, took fewer 'risks'
	Wheels	TUC demonstration	October 18th 2014	central London, UK	Manoeuvres, navigation, risk	Spatially-restrictive, A-to-B
		NCAFC demonstration	November 19th 2014	north + central London, UK	Manoeuvres, navigation, risk, failure	Spatially-expansive, 'rhizomatic'

Table 6.1 | Scoping sites and case studies

One of the main difficulties with researching protest events is their fixed nature. This meant that any missed opportunities or moments during the events would be hard to rectify. Preparing for the demonstrations, therefore, involved considerable planning. Much of the experience in how to prepare for a protest event has come from the last five years of actively attending demonstrations both in a research and social capacity. Since 2011 I have attended the 'March for the Alternative' (2011), another TUC-organized demonstration 'A Future That Works' (2012), an anti-G8

demonstration otherwise known as ‘J8’ (2013), and a ‘Stand Up to Racism’ event (2014), all in London. I have also attended the international ‘Nuclear Security Summit’ in The Hague, Netherlands (2014); as well as two separate anti-austerity demonstrations during the Conservative Party conferences in Manchester (2013, 2015). I have also actively followed and participated online for numerous other protest events including the NUS’ ‘Demo 2012’ (2012), the ‘Million Mask March’ (2014) and the most recent NCAFC ‘Free Education’ demonstration (2015). Nonetheless, I remain reluctant to call myself an activist, even less so an ‘academic-activist’ (Maxey 1999, 199) or any similar conjunctive. Still, it is the knowledge garnered from each – both on the streets and online – that have given me the confidence to conduct myself in the field.

Final Destination: Case Study and Sites

But as well as expanding and deepening the research project to include a search for non-digital ‘disruptive cartographies’ alongside non-cartographic ‘disobedient objects’, I also decided to re-appraise the apparent demise, death and ‘failure’ of the Sukey platform. Instead of an empirical dead-end I started to understand it differently as an opportunity. Investigating the rise and fall of a technological project would, it was hoped, generate a markedly different set of conclusions as to one focusing plainly on its rise. Understanding, therefore, how the Sukey project came to an end would situate how it came into being. Few, if any, research projects that take a form of digital technology as its central case study focus on their failure. This project aimed to attend to this gap in existing research.

But as a result there were methodological problems. How could a framework be devised that could appropriately investigate the impact of a mobile, digital mapping platform that was no longer functioning? Despite engaging in a previous research project that was able to capture its use in protest events, the timing of this one would mean that the opportunity to analyze its deployment on a demonstration would not arise. As a result I decided to approach the project

from a number of different angles in a 'multi-sited' ethnography (Marcus 1998, Saukko 2003). As discussed previously, the inclusion of supporting sites allowing me to investigate both non-digital and non-cartographic projects gave me a greater breadth. However, in lieu of being able to track the use of the platform during actual protest events, I had to devise an alternative methodology that still allowed me to go 'deep' into the project itself.

This meant that I had to look to how the project was not only initially conceived but morphed over the years of its operation and beyond. Rather than focus rather exclusively on the technical nature of its design – how it worked – it entailed a socio-technical investigation into how it had come into being in the first instance – and for what reason. It also, necessarily involved asking why its fleeting existence had come to a relatively premature end.

Engine

A 'material semiotic' (Haraway 1988; Law 2004, 2009) analysis of cartographic and non-cartographic material produced during the project, alongside two interviews formed the 'engine' site of the research. As Sukey was a project spanning across and beyond the digital map itself it became important to track and capture evidence of its evolution. Assessing this evolution involved taking into account the platform's aesthetic components as well as its navigational ones, evaluating the migration from one mapping provider (Google) to another (OSM), for instance. The work of Christian Bittner et al. (2013) are foundational in this regard, in the way they deploy a material-semiotic ANT framework as a way of 'tracing [the] contingencies' (Bittner et al. 2013, 1) of a digital mapping assemblage. As Bittner et al. (2013, 6) further suggest, this is an approach that does not look for (nor validate) 'discrete empirical objects' but, instead, approaches such elements as part of a broader, distributed reality through which objects become aligned and in relation.

In order to structure this, it also meant adopting Wood and Fels' semiotic terminology of the 'perimap' and the 'epimap' (Wood and Fels 2008, 8-12). The former of these two terms refers to

features directly framing the map itself; whilst the latter to all material beyond the confines of the map, nonetheless integral in shaping it. Comprehending the digital map as part of a wider navigational assemblage meant that it was critical to analyze default mapping styles, video output and published 'survival guides' all designed to enhance the digital mapping experience for users. In this, the digital map can be said to have gathered together a number of important allies that supported its efforts as a navigational tool. Acknowledging their power in sustaining the mapping project is therefore vital.

It also meant paying prominent attention to the aesthetic development of the project over the duration of its existence. As I referred to in chapter 4, 'the interface is now a central aesthetic form' (Pold 2005, n.p.). Accordingly, one must deal with how the interface invites or affords particular gestural actions (taps, strokes and double-taps) as well as imposes a strict visual framework governing these actions. But doing so demands that one interrogate the coming-into-being of these visual elements. Mobile interfaces are small and space is at a premium. Adaptations made to the Sukey platform were based on user feedback and testing. Thus, treating it as a fixed object such as a non-digital photograph did not suffice. Instead, I had to account for it being a 'fluid technology' (de Laet and Mol 2000, 225) subject to alterations and fixes that would ever-so-slightly tweak its form and interactive nature. Establishing an 'aesthetic trajectory' through these iterations, therefore, was critical to ensuring iterations of the platform could be evaluated.

One interview took place in mainland Europe with a computer programmer/'hacktivist' whose name and gender will remain anonymous. They will be referred to as 'developer X' throughout this thesis for privacy reasons and to avoid implicating the individual should particular comments be traced to them. I re-established contact with the individual in December 2014 and to my surprise they responded swiftly. We agreed to meet in mainland Europe in February 2015. This would be a different interview to the kind conducted with another of the original developers during the previous research project.

Paramap	
Perimap	**Epimap**
Titles Photographs Illustrations Charts, graphs, timelines Legends, scale bars, north arrows, other standard cartographic elements Callout text, blurbs Credits Borders, decorative elements	Accompanying article(s) Advertisements that refer to the map Marketing copy Letters from the editor Letters to the editor about the map Behind the scenes info (how the map was created)

Table 6.2 | Paramap. Source: adapted from Wood and Fels (2008)

Developer X was involved in the Sukey project directly from its inception in 2010 to the decision to end development on it roughly sometime in 2013. Ostensibly, the 'interview' amounted to far more than this, comprising, primarily, of a visit to a prominent hackspace, launched in the 1990s, and home to various digital, hacker and new media-related organizations and initiatives. The 'interview' itself was spread across two weekdays at the hackspace and other locations.

At the same time, I also initiated contact with a design strategist previously involved with the project. Luckily enough I received another quick, positive reply and we agreed to meet in April 2015. As the individual was based in Washington DC, USA I timed the interview with an academic conference I was planning to attend in the same month in a different city. Their inclusion within the project stemmed from the desire to expand the confines of the research to include those not necessarily present at the beginning, and to understand the Sukey project as a series of iterative *platforms* in the plural. They will be referred to as 'strategist X' in this thesis, again, for reasons of privacy. Their name and gender, therefore, will remain anonymous.

Strategist X was involved in the Sukey project indirectly between 2011 and 2012, having met one individual involved in its development at an internet festival. During this short period, they

provided organizational, strategic and developmental assistance to Sukey, desiring to extend the project beyond its original scope as a protest communication platform. The interview took place in several locations generally spread around a burgeoning, post-industrial district in central Washington DC across one Sunday morning in late spring 2015.

Each can be considered as a 'mobile interview' incorporating elements of the 'walking interview' (Evans and Jones 2011, 849), but falling short of a full 'go-along' (Kusenbach 2003, 463) ethnographic approach. Whilst each participant took me to locations they were familiar with, neither occasion could necessarily be considered as part of a 'daily routine' for either; the usual criteria for establishing a go-along. The broader term 'mobile interview' is preferred to 'walking interview' for the simple fact that not all of either interview took place whilst walking. Further, elements of each interview took place whilst both parties were entirely sedentary, with multiple places frequented during each.[11] Some were intended and set-up before, whilst others were agreed on-the-fly as specific destinations, and a plethora of further locations the result of being in transit to get to both. Employing the more general category of mobile interview, therefore, reflects this variance in place, mode and interaction.

These mobile interviews provided immeasurable opportunities limited during the conduction of more sedentary, time-limited conversations. As Crang and Cook note, '[i]nterviewing "on the move" can enable people to situate and recount complex and fluid events and memories' (Crang and Cook 2007, 65), and it is this sentiment I sought to channel. Further, echoing Sarah Pink (2009, 85) that 'the interview is not simply a verbal conversation that can be audio-recorded', in which neither 'interviewer [or] interviewee…need to be sitting down, immobilized and simply speaking'. Whilst these were not necessarily personal choices thrust upon the interviewees from the

[11] These included, but were not limited to: the communal area of the hackspace, the underground work area of the hackspace, an outside area of the hackspace by a river, on the route to a subway station, on a subway train, sat down at a Turkish café, in various locations inside a green enterprise space, in the lobby of an apartment block, on the walk to a gentrified market, and on the pavement outside of the same market.

beginning, they nonetheless emerged as more comfortable situations both for the researcher and subject. Indeed, as they were suggested by each of the interviewees, along with the locations, there was a considerable shift in power from the researcher to the subject. Neither interview felt like an imposition of conversation topics onto the interviewee. Whilst there was a considerable degree of preparation involved in both interviews neither were scripted so to speak. As such the interviews felt, at least to myself, as free-flowing, light-hearted yet necessarily intense occasions. A broad sweep of topics was covered in both interviews, much of which were directly relevant to the thesis, some of which were marginally of relation to the thesis, and others of which, although far removed from the content of the thesis, were entirely necessary to the smooth running of the interview.

As the mobile interviews did not involve the direct recording of the conversations had with both developer X and strategist X, the interpretative stage of the analysis did not involve a routine coding of words and phrases uttered by each. Instead, the secondary documents as drafted by myself in the follow-up to each meeting were interpreted for more general themes threaded through, and driving, the conversation itself. Indeed, a large degree of this work was done in a preliminary sense in this initial writing-up phase immediately after each mobile interview. The 'analysis' itself, therefore, was folded into the descriptive and contextual elements of the interview evaluation so that they came to be, in a sense, much more like an ethnographic diary – albeit a more intensive one focused on one particular individual during a single, sprawling conversation. Although particular themes certainly guided these interviews, their analysis was not limited to such. Many topics emerged from the conversation that were not scripted nor expected. Maintaining this openness to possible responses was critical to the success of the interviews and allowed for a more flexible interpretation.

Windscreen

Two further interviews were scheduled with student activists who had attended an NCAFC demonstration on November 19th 2014. These comprised the 'windscreen' site of the research that looked to established how activists calculated risk and gained navigational knowledges during Sukey-less protests. I deploy the work of Agre (1994), Gerlach (2014) and November et al. (2010) to detail how this navigational knowledge was captured during such events. Like the section before, I combine these interviews with a material semiotic appraisal of the Sukey platform.

Interviews were undertaken on the campus of a UK university and conducted with two separate individuals affiliated to local and national student organizations - one an on-campus campaign for 'free education', another the NCAFC – both of whom were present at the student demonstration in November 2014. Neither were old enough to have participated in what can be called the 'first-wave'[12] of free education activism in 2010/11, but can be considered to be part of a resurgent second-wave of student activism in the UK, centered on a number of relevant issues to HE and university campus life.[13] I refer to each as 'student activist X' and 'student activist Y'.

However, neither of the interviewees had participated nor aided in organizing (whether locally or in national committees) a student protest event before November 2014, although both had been aware of such efforts before – especially those in 2010/11 in London. As a result, the student demonstration in November 2014 served as an eye-opening introduction into the world of street politics. The reason for wanting to interview those involved in this particular second-wave of student activism was manifold. Firstly, neither had prior experience of participating in a protest

[12] This is not, of course, to suggest that prior to 2010/2011 there was no student activism in the UK. Far from it – the UK has a rich student activist history and legacy. However, I argue that this was the first-wave of *digitally-mediated* student activism in the UK distinct from previous incarnations thanks to the rise of nascent social media platforms, and new 'connective' forms of activism (see; Bennett and Segerberg 2012).

[13] Whilst some on-campus actions have focused on police brutality (University of London, 2013; Warwick, 2014), others have taken basic pay and conditions for university staff as a key issue ('#3Cosas' campaign, 2013), and more recent demonstrations have centered on the impact of the UK border regime on international students (NCAFC demonstration 2015).

demonstration away from a university campus and as such had not gathered a kind of 'operational knowledge' of what to expect. As a result, both students had taken part in pre-demonstration workshops not only to discuss practical details such as transportation and safety details such as the university's 'buddy system'[14], but also to assist in banner and placard creation. These elements became important in gathering an understanding of how digital technology played and plays a role in the practical and tactical aspects of a protest event. Secondly, in connection to this, neither had a spatial knowledge of how big protest events play out – especially in London itself. This is much the similar situation as during the first-wave of student activists in the 9K era – few had an adequate navigational knowledge of the city.

Sukey, therefore, played its part in ensuring they had sufficient near-live information of such – especially as events were unpredictable and navigational instructions were likely to change at a moment's notice. Thirdly, neither had been present during the deployment of the Sukey platform during the first-wave of student activism in the 9K era. As such, they became critical subjects for how student protest events in a post-Sukey space operated. Whilst some of this insight would be garnered from an auto-ethnographic presence at the same demonstrations, only by interviewing others present would a greater interpretation of these navigational predicaments be possible. As Crang and Cook (2007, 60) suggest 'interviewing can by no means be treated as a separate method', so as such, this integration of interview data with auto-ethnographic data was vital. Then fourthly, each student had a slightly differing personal, geographical and academic background that allowed certain positions to be considered in opposition to the other. Whilst one was familiar with London as a whole, the other was not. One was beginning to get involved in national student politics, the other marginally less so. One had stuck to the pre-arranged demonstration route, the

[14] This so-called 'buddy system' ensures that each student is paired with another 'buddy' with whom they must remain with throughout the day. This is common to fieldtrip health and safety regulation across Higher and Lower Education institutions in the UK. Usually the buddy system relies on the pairing of a more experienced student with a less experienced one. In this case, a student with prior participation in a protest event.

other had decided to err from it. Whilst far from representative of the 10,000 students who had attended the NCAFC demonstration in November 2014 (indeed, without ever intending to be), these two students were typical of those straddling the line between organizer, activist and interested/engaged student.

In order to secure these interviews a general call for participation was placed online. This was done firstly through the creation of a blog entitled 'Playing with Protest' on which the details and intentions of the research project were outlined, ensuring an emphasis on the 'impact of mobile, digital mapping technologies on protest events' (Hind 2014b, n.p.) was made clear to those visiting the site. The homepage itself contained the call in bold with a short description of what would be required of participants, reproduced in the Appendix. Once the TUC demonstration had passed the call was adapted to refer explicitly to the upcoming NCAFC student protest. It was also enlarged and further emboldened in order to attract those who had found their way to the website. Another section of text gave a little more context to the project and assured possible participants that beyond the attendance and recording of their experience little would be required of them (see Appendix).

From here, a number of posts were made through personal social media accounts in order to advertise the project call, with targeted messages sent to the TUC Young Workers, Student Assembly Against Austerity, Young Greens, NCAFC, and False Economy Facebook pages. General Twitter messages were posted on three occasions prior to the TUC demonstration (via @samhind10), and a further three times in advance of the NCAFC demonstration. A number of these messages were retweeted by relevant organizations including the official TUC demonstration account (@PayRise4Britain) and the co-organizers of the student demonstration (@TheStudentAssem). Through this, a number of conversations were initiated both in regards to the TUC demonstration and the NCAFC protest via email and private messages. It is from the latter communications that the two interviews with student activists were secured.

However, despite concerted and continued efforts, no interviews were undertaken with participants on the TUC demonstrations. Gaining access to those within this camp proved difficult despite repeated attempts to do so. Although alterations were made to the website text in order to tone down the 'academic wording' that a TUC demonstration organizer noted in an email correspondence, no individuals got in contact.[15]

The sedentary interviews entailed a slightly different approach to the mobile interviews, involving as they did a verbatim transcription of the conversations had with student activists. This meant that a tighter analysis of the content of the interviews was possible, through which the occurrence of particular words and phrases concerning risk, navigation and manoeuvres could be analyzed for their importance. The framework employed during these interviews was deliberately chronological and based on each activists' experience on their respective protest demonstrations. Using this chronological format allowed me to closely tie the moments experienced by each in with the auto-ethnographic material produced during the same demonstrations. This allowed me to corroborate certain events during the day. It also allowed the interviewees to be comfortable in their responses knowing they were pinned in relation to a sequential format.[16] As a result, the interpretative stage of the sedentary interview analysis followed the same process as the interpretative stage of the auto-ethnographic protest event analysis; both oriented towards the explication of moments and manoeuvres during said demonstrations.

Nonetheless, this was not an attempt to form some kind of ontological universalism but, in fact, to probe for an 'ontological multiplicity' (Law 2004, 137) stopping short of a full investigation into

[15] One particular comment in the same email is perhaps telling of this failure, however. Despite retweets from a personal account, the TUC organizer had thought better of doing the same with the official TUC demonstration account because he 'guessed [I was] more interested in grassroots generated technology rather than anything from us [the TUC]'; perhaps serving as a neat, albeit anecdotal, representation of the distinction between the organization and architecture of the respective demonstrations. Personal email communication, October 13th 2014.

[16] Doing so allowed the conversation to flow more smoothly despite the overt presence of this temporal framework. Without this I was worried each participant would perhaps be too nervous to elaborate fully on events, and instead simply provide me with what Crang and Cook (2007, 69) refer to as the 'short, snappy, conventional, rehearsed versions' of events.

any possible 'ontological disjunction' (Law 2004, 134) between protest event experiences. That these experiences might differ somewhat from my own was not, methodologically, a problem in itself but merely a fact of attending and immersing oneself in such an event with multiple angles and aspects.

Wheels

An auto-ethnography of two protest events comprised the 'wheels' site of the research. This approach was taken in order to, as David Butz and Kathryn Besio (2009, 166) suggest, 'trace the intimacies of…flows and formations from the inside out…'. Triangulated with the prior interviews they allowed me to participate in the dynamics I wished to explore – the worldly phenomena, navigational knowledges and spatial manoeuvres generated during a demonstration – as well as being able to reflect on the positionality of being in the midst of these events (Anderson 2006). Although short of the kind of immersive, auto-ethnography practiced by David Graeber (2009) in relation to activist groups, it was nonetheless an approach built upon five years of attending, participating in, and navigating through such demonstrations.

The events were a TUC demonstration on the October 18th 2014 and the NCAFC demonstration noted in the last section. The TUC are a UK trade union umbrella organization comprising of 52 affiliated unions and over 5.5 million members (TUC 2015, n.p.). Founded in 1868, the TUC is the UK's largest trade union body and represents the majority of trade unions in the country. Alongside regular campaigns regarding workers' rights, they also organize routed demonstrations. The largest in recent times was an anti-austerity demonstration called the 'March for the Alternative' in London in 2011. NCAFC, on the other hand, is a 'network of student and education worker activists' founded in 2010 in response to the rising issues of 'tuition fees, education cuts and wider cuts to public services' (NCAFC 2015, n.p.). Demonstrations in 2010 and 2011 against

the rise in tuition fees – out of which they were born – brought over 90,000 students out onto the streets.

However, the Sukey platform was not live for either of the scheduled TUC or NCAFC protest events, as discussed previously. Therefore, executing this particular arm of the research project would demand a peculiar, innovative approach. Instead of focusing on the platform itself – an impossible task in light of its demise – it would attempt to shine a light on the kinds of spatial manoeuvres the platform was oriented towards that were still being practiced in 2015. In other words, it would look towards the cartographic *effects* rather than, exclusively, the mechanics.

In order to comprehend how geographic knowledges are captured cartographically, 'mapping moments' (Dodge et al. 2009, 234) are generated, and spatial manoeuvres executed, it is necessary to say a little on the tools and techniques deployed in the field. These comprised of what Hein et al. (2008, 1267) call 'mobile methods'. In other words, 'methods where the research subject and researcher are in motion in the "field"' (Hein et al. 2008, 1267). This section will seek to detail these authors' conception of mobile methods to expand upon its utility within a protest event. Further, it will also work to detail how the so-called 'research subject' can be re-configured through mobile methods to take account of how events comprising of multiple, collective bodies – human and non-human – can be captured.

What is important to mention here is the extent to which the deployment of mobile methods is dependent upon a litany of mobile and often, but not always, expressly *digital* technologies. Three devices are central to the ability to record particular kinds of data flows during protest events: the video (or, 'action') camera, the GPS receiver, and the smartphone. Some enabled the intermittent recording of visual data (video camera), others allowed for the continuous tracking of geo-locational data (GPS receiver), and further devices ensured that textual communication was made possible (smartphone).

There are a number of considerations to take into account when deploying a small, discrete 'action' camera. Protest events are heavily surveilled, temporary spaces in which many activists and police seek to evade identification and recognition. 'Walking with video' (Pink 2007, 240), therefore, produces a number of ethical concerns that must be considered not only in advance of going 'into' the field, so to speak, but also during the encounters themselves. As such, one must constantly be aware of possible ethical missteps not limited to: the direct filming of protesters themselves (including faces, identifiable clothing and other objects, signs of affiliation or friends), the direct filming of the police (including FITs, EGTs, Territorial Support Group [TSG] officers, and liaison officers), or the recording of possibly illegal activity (criminal damage, trespass, assault, public order offences, etc.).

However, this is not to say that filming during protest events is ethically contentious on the whole. Where the video camera is directed often defines the extent to which the activity in question is ethically debatable. The use of video cameras to record incidents during protest events is common-place. Often they are used as a necessary mode of 'witnessing' in order to record the actions of protesters and police as well the interactions between them, in case of future incidents such as criminal charges. In recording these incidents they form the backbone of a 'tertiary memory' (Stiegler 1998, 2008) of the wider event; allowing it to live on far longer than they would do merely in the minds of those involved. Indeed, in providing 'concrete evidence' of their occurrence – due to the greater confidence people have in video footage than mere human recall – this form of witnessing lends greater currency to the captured events.

Nonetheless, there are still a number of steps that have to be taken to ensure that individuals recorded taking part in particular manoeuvres have had their identities removed from published content. In the screenshots produced from the original footage, the faces of protesters have been blurred to avoid visual recognition – regardless of whether they have committed an offence. This ensures that the identity of those participating in such events is not compromised; countering

doubts expressed by the likes of Davies (2008) as to the compatibility of photographic methods and participant confidentiality. As such, their blurring does not presuppose illegality, but preserves their anonymity in any case.

Alongside the video camera, the GPS device is also a critical element in the methodological assemblage. Unlike the video camera the GPS exclusively records the user as opposed to a subject. Whilst the video camera is an attempt to capture external moments and activities, the GPS device is introspective and intended to provide a recoverable memory of movements. Although video footage demands an active recording of particular moments during a demonstration, and photos give an even more selective but nonetheless indicative active snapshot of events, a GPS 'trace', once set-up correctly, allows for an extensive, accurate, passive record of all movements throughout the extent of an event. This is reason why the GPS device is considered a vital tool.

Using a smartphone during such protest events also became a necessity – providing access to primary, public social media platforms such as Twitter. Although far from all communication is routed through the platform, Twitter nonetheless becomes a digital space on which a range of forms of communication are generated (see; Gerbaudo 2012, Juris 2012, Nunes 2014). During the demonstrations Twitter often turns into a tactical platform through which photos and messages of particular flashpoints and interactions between protesters and police are sent, as well as pictures of banners, signs and other material objects that come to signify a street protest (see; Monterde and Postill 2014, Rodriguez-Amat and Brantner 2014). Although Sukey is the object of the study in this thesis, the use of Twitter also became a methodological approach. In other words, it was often only through the platform that it became possible to orientate myself towards particular moments within the demonstration that were of tactical importance. Even when not

present at some demonstrations ('Demo 2012', NCAFC 'Free Education 2015', etc.) the use of Twitter can still be vital for those attending – especially if messages of a tactical nature are sent.[17]

There are, however, particular practical drawbacks associated with deploying such a heady array of tools, not least the ever-present need for batteries and a consideration of alternative power sources. Although these might sound like banal, even common-sense considerations they continue to exert considerable effect on the capacity to capture events. During some moments it becomes necessary, for example, to continuously film in the expectation that something might occur. That this might not be known at the moment the researcher decides to start filming obviously produces an uncertainty to proceedings. A particular shot, therefore, may last anything from a couple of seconds should a particular moment or 'flashpoint' arise, or last into double-digit minutes should it be necessary to track an unfolding event such as the storming of a fenced public square. In either case quick decisions need to be made as to whether it is more necessary to record such events or to conserve battery power for future moments.

In total I shot 17 individual videos during both the TUC and NCAFC demonstrations. Analyzing them, following the likes of Brown and Laurier (2012), entailed an initial close reading of each in order to determine particular moments that could be characterized as the formation of a spatial manoeuvre. At this stage the categories for determining what would count as a spatial manoeuvre were deliberately loose and relatively unknown besides pertaining to some kind of movement (collective or otherwise) or communication (verbal, gestural, written). A lack of either was also a stimulation to provide a description, although in practice this was more difficult to identify for obvious reasons.[18]

[17] An example is a tweet sent by myself during the NCAFC 'Free Education' demonstration in 2015. I had been following the events during the day and reports came through that students had been kettled. As a reminder I tweeted that students need not 'hand over personal details as a condition of release' (Hind 2015c, n.p.). It was also embedded within the *Guardian*'s live report of the protest (Smith and Tran 2015, 2).

[18] Special attention was paid to particular groupings (black bloc), police officers (TSG, EGT, FITs, liaison officers), locations (Whitehall, Parliament Square), banners (Occupy Democracy), sounds (drums, rattles,

In general, therefore, I paid attention to 'emergent, fleeting moment[s]' (Soukup 2013, 228) of the protest event writ large. The guiding framework for identifying these micro-moments was the notion of disruption and disruptive cartographies. In essence, any of the above that exercised a disruptive logic or alternatively, demonstrated a distinct *lack of* disruptive capacity. An example of the former might be the physical action of removing one of the metal barriers lining a protest route in order to make an escape. An example of the latter might be the gesturing by an event steward towards a protest 'bloc' to instruct them to stop moving. In either case a spatial manoeuvring of some kind is played out. The former illustrates a physical disruptive action, whilst the latter exemplifies a gestural non-disruptive action. It is the identification of these activities that was central to the preliminary video analysis phase.

On each occasion I witnessed a valuable moment, I noted the time at which it occurred within the particular video, and drafted a short description of the activity.[19] After this, I returned to the source videos to corroborate what had been identified in the transcript and to select video frames for screenshot collation. The intention here was to devise a multi-frame selection of frozen moments within the manoeuvre I wished to explicate. In essence, they would provide a visual sequence of images that would hopefully illustrate the moment in action, akin to the frames in a graphic novel.[20] For this, Eric Laurier's comic book methodology was a vital reference point (Laurier 2014, Laurier et al. 2016).[21] Using the transcript and the source footage in tandem, I identified the extent of each particular moment and began to select particular frames

whistles, loudspeaker announcements), gestures (pointing, sweeping motions) or playful activities (costumes, 'mini-dramas').

[19] No specialist soft or hardware was used besides a default media player and a word document. The routinization of this task – of playing and stopping footage, toggling windows, renaming video files, and writing descriptive text – was established iteratively in a trial-and-error format. The use of a large, widescreen monitor enabled the window arrangement, ensuring that visual detail could still be seen at a high-resolution whilst the descriptive log was still in view.

[20] For previous visual analysis of graphic novel material, see; Hind (2010).

[21] For a spectacular, meticulous undergraduate thesis deploying Laurier's methodology, see; Spooner (2015).

exemplifying each stage. In total, I identified five moments from the TUC demonstration and a further four from the NCAFC protest.[22]

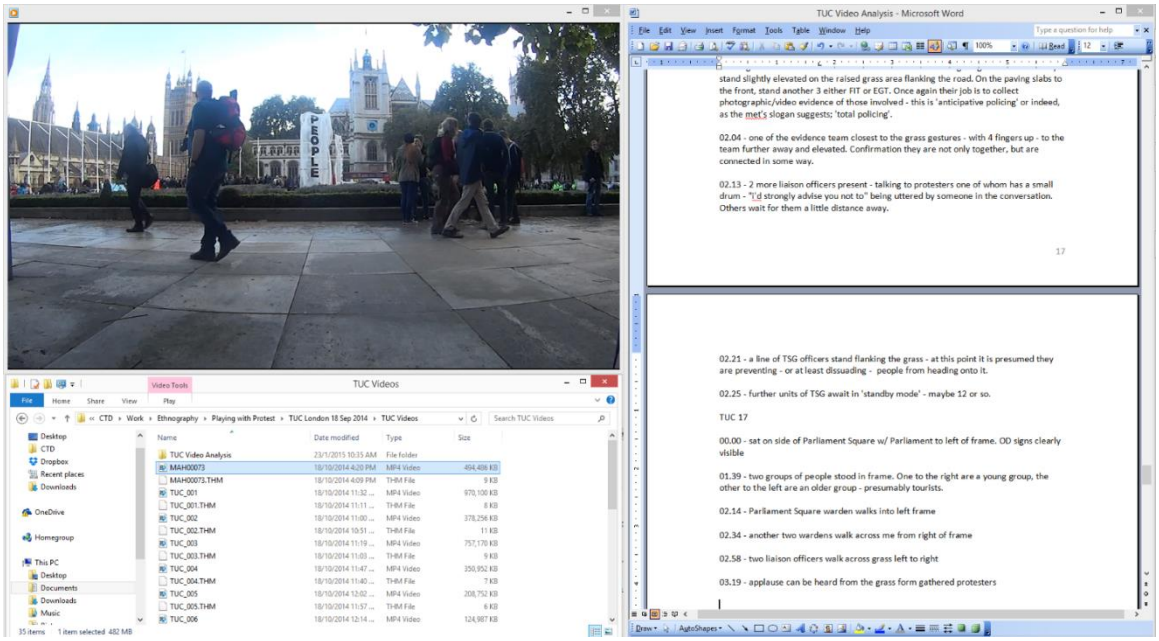
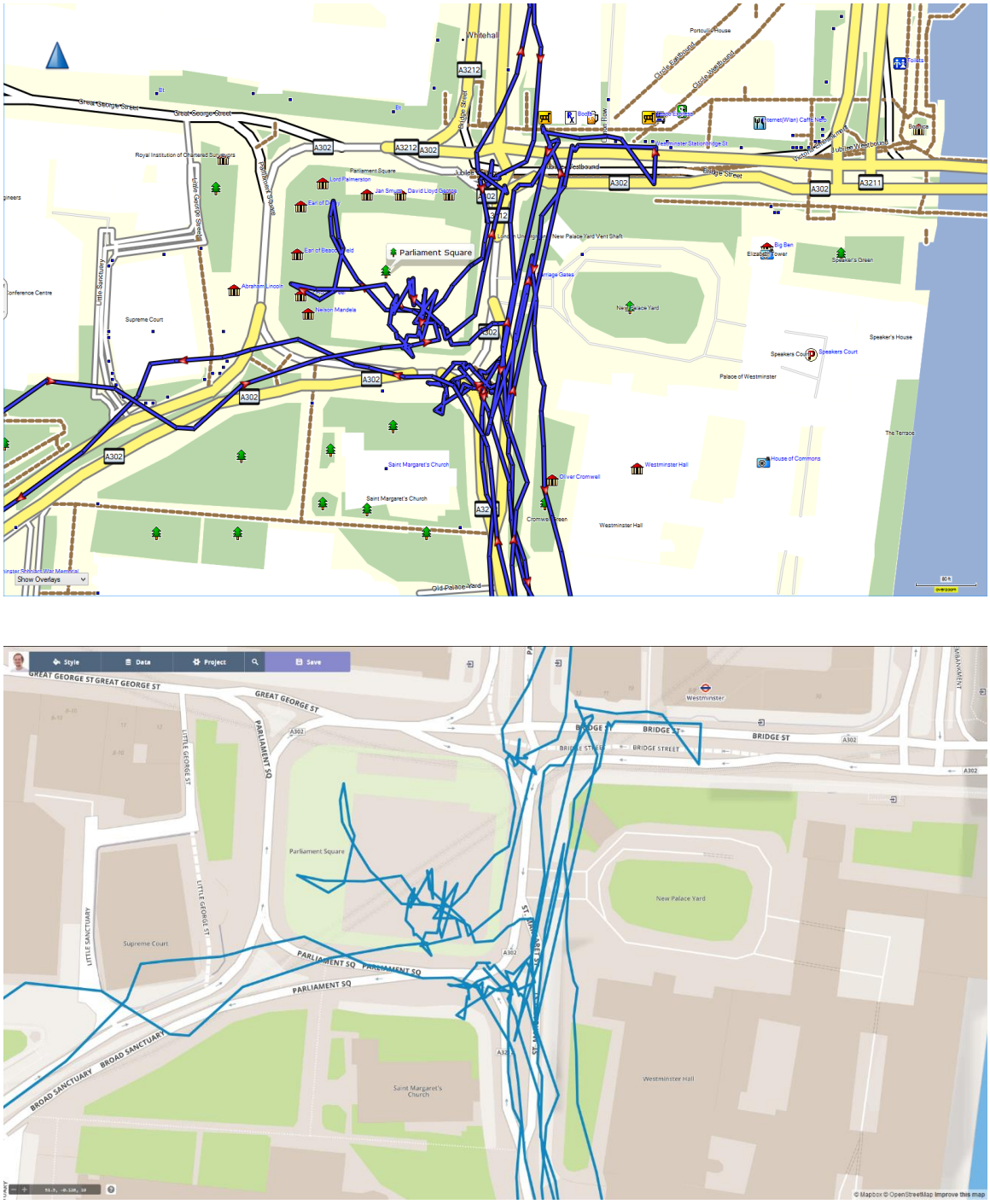


Fig 6.3 | Analysis setup

These sequences were set alongside maps of each particular tracked manoeuvre, in order to situate each moment geospatially as well as visually. This occurred in two stages. Firstly, data from the GPS device was uploaded to a free, proprietary, offline mapping platform (Garmin Basecamp). This tracking data was then overlain on an open-source basemap to ascertain accuracy and to correct any errors (loss of signal, false elevation data, etc.). Once assured of the validity of the track data I uploaded onto an open-source, web-based mapping platform (Mapbox) in order to produce a more aesthetically-pleasing set of maps.

[22] The number of raw images selected to exemplify each moment ranged from six to 22 individual shots. Once the frame had been selected it was then captured as a screenshot, copied, and cut in photo-editing software before being saved in an appropriate image file type.



Map 6.1 | Basecamp (top) and Mapbox (bottom)

Conclusion

In this chapter I have sought to connect the conceptual literature used to inform the notion of 'disruptive cartographies' to the empirical efforts that comprise this thesis by describing the methods employed and explaining the rationale behind them. At present I argue there has been a failure to comprehend the spatial, performative nature of digital map use during protest events.

Along with this conceptual *lacuna* there is also a lack of appropriate methodological approaches and tools to research such practices in the world itself.

As a way of wrestling with the former of these concerns it has been necessary to deal firstly with the non-cartographic and non-digital precursors to mobile, digital mapping technologies. Establishing a genealogy of activist mapping projects thus allows a more comprehensive interpretation of more recent cartographic evolutions. In the scoping of the Disobedient Objects exhibition at the V&A and the 56A Infoshop, this was made possible. These scoping efforts can be considered as precursor activities informing and considerably re-constituting the direction and focus of the main research sites.

In order to correct the latter, it has been necessary to develop a multi-sited research methodology to interrogate the worldly phenomena, navigational knowledges and spatial manoeuvres generated during protest events. This has entailed the deployment of an automotive metaphor in order to sketch the design of such an approach. In comprehending the digital mapping enterprise as a fully-functioning vehicle comprising of an engine, a windscreen and a set of wheels, these variously oriented cartographic features can be incorporated into the overall research methodology. The driving force behind this is the epistemological understanding and, indeed, ontological reality, that the digital map and its attendant practices are manifestly reliant upon numerous actors and sites, human and non-human. This multi-site approach seeks to deal with this reality.

Nevertheless, despite the design of a multi-sited, interconnected research methodology no one particular set of methods or tools necessary follows. Moreover, many existing techniques for implementing multi-sited research are incapable of dealing with the production of event-based data. Digital life itself is defined in, and through, the generation of real-time data. Therefore, any research framework that attempts to shine a light on the digital must take this into account. As a result, a novel mobile methods approach was developed that took advantage of a suite of mobile,

digital technologies including ‘action’ video cameras, GPS devices and smartphones in concert with typical ethnographic tools such as the notebook and pen. The development of a ‘mapping moments’ (Dodge et al. 2009, 234) framework allowed particular spatial manoeuvres to be witnessed, captured and brought (back) to life through these various technological appendages. In a sense, to pin down what Law (2004, 86) calls ‘elusive objects’.

Moreover, to account for the ethico-pragmatic nature of conducting interviews with those working with digital technologies and to digital concerns over privacy and security, novel ethnographic techniques had to be employed in order to ensure the smooth running of such encounters. These conditions, rather than imposing an unwanted and difficult framework on the researcher, engendered a rather more reflexive, delicate and, in hindsight, highly necessary approach to dealing with the ethical demands of research participants in a digital world. In other words, they re-shaped the research methods for the better.

From here we can now move on to consider how exactly the calculable, risky nature of such disruptive cartographies played out for real.

Chapter 7 | Under the Bonnet

Following the conceptual argument in chapter 4, the notion of a 'ludic aesthetic' is brought into empirical focus in this chapter. This aesthetic is a necessary focus because of the way in which it 'drove' the project on; affording different navigational interactions and manoeuvres based on platform updates. Therefore, this chapter is a charting of this evolution as the platform came into material being, morphed and pivoted its way through a messy activist reality. Sukey did not appear out of thin air. Instead, it was carefully crafted into existence with the ideas of those who developed it and set out its strategic future. The raw material for its production, therefore, must be explored – as well as the continuing supply of 'fuel' to the project throughout the years.

8-bit culture – in which pixelated graphics, 'chiptune' audio and animalistic characters take prominence – is central to a kind of 'coherent aesthetic' (Galloway 2012, 46) that has proliferated through protest-related digital projects, from Increpare's simple flash game *Kettle* (2010), to Leonard Menchiari's indie simulator *Riot: Civil Unrest* (2016). Unlike in Lev Manovich's (2001) reading, these titles are not emblematic of a slick, modern aesthetic led by the interface of the Apple computer and aped by other technology companies for a variety of operating systems, software and computer games. Instead, they possess a DIY ethos that is embodied in these material traces. Aesthetic links between all three suggest that Sukey resonated in the same, broad, design discourse as either Kettle or Riot – one rooted in a counter-cultural gaming world, and driven by a kind of re-valuation of so-called 'retrogames' (Rehak 2012, n.p.).

However, rather than an in-browser flash game or independent videogame, Sukey was a fully-functioning protest application. As a result, there are significant differences between Sukey, *Kettle* and *Riot: Civil Unrest*. But these differences do not manifest themselves in an otherwise coherent aesthetic register that extends through each. Instead, they are generated in regards to its interactive possibilities. As such it becomes necessary to support the above material analysis with

a consideration of why particular design decisions were taken during the project, and moreover, why some weren't.

As a set-up to the next chapter, this articulation of aesthetic choices slides into a discussion on the platform's navigational capacity. Unlike *Kettle* and *Riot*, Sukey was designed primarily for a mobile application (whilst being supported by desktop users). Through its mobile integration – as a 'navigational interface' (Lammes 2011, 5) – interaction with the application takes place in a markedly different fashion without the use of keyboards, joysticks or computer mice. As a result of being embedded within activism as opposed to the gaming community, Sukey is oriented outwards towards the facilitation of protest manoeuvres rather than game moves.

The key driver of this navigational capacity is the platform's reliance on user updates regarding operational phenomena. In order for this capacity to be maximized, however, instructions on how to compose tweets and texts were routinely posted through social media and other material. The importance of sending the 'who, what, were, when' of every incident therefore aided in smoothing the parsing and verification of navigational data, following the distinctions made in Philip Agre's (1994) capture model for each 'unit' of data to be indivisible, unique, replicable and compoundable in order for it to be put to use.

I therefore argue in this chapter that Sukey acted as a 'pivot' between the 'inward' interaction with a digital, mobile device and the 'outward' generation of manoeuvres. This is the key distinction between Sukey as a protest mapping application and mere protest simulators such as *Kettle* and *Riot: Civil Unrest*.

Video Aesthetics

This 8-bit aesthetic is visible throughout the Sukey project from inception. Three examples will be explored here: two introductory videos released during the opening months of the platform's

public release, the iterative Sukey logo as updated, refined and re-designed over the entirety of the project from 2010-2013, and a 'survival guide' released with a later re-launch of the platform in 2012. Each of these include the development of the 8-bit graphics across the project's video, image and textual output. Or, what Denis Wood and John Fels (2008, 192) refer to as the 'paramap'. That is, the extent of material that shapes the map's reception. Moreover, each of them bear aesthetic similarities to the two protest-related games/simulators introduced above – Increpare's *Kettle* (2010) and Leonard Menchiari's *Riot: Civil Unrest* (2016).

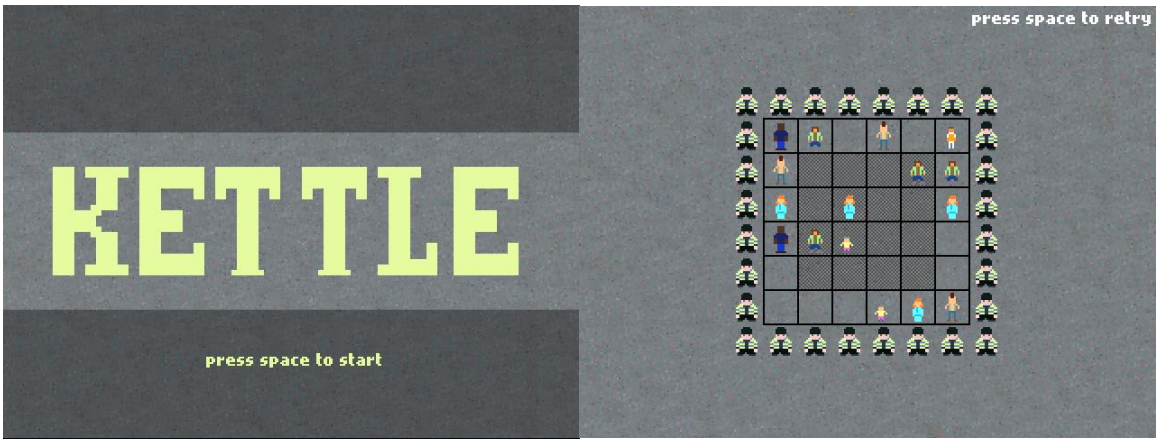


Fig 7.1 | Online flash game *Kettle*. Source: Increpare (2010)

Fig 7.2 | Protest simulator *Riot: Civil Unrest*. Source: Menchiari (2016)

In the first video (Sukey 2011a) introducing the application to potential users, the Sukey web address is revealed by a green 8-bit T-rex to the sound of an unidentified 'chiptune' track. In the following 1 minute and 30 seconds a narrator introduces the platform by detailing what it is ('a personal newsdesk for demonstrators') and what it is intended to do ('to keep protesters safe, mobile and informed'). In order to illustrate its intended use a series of animated scenes play out complete with different dinosaur species – including T-rex and Stegosauruses. In the first, a bespectacled newsreader (the T-rex) is positioned in front of a script as protesters (Stegosauruses) with placards walk past a building on an inset screen. In the second, a number of these protesters are once again shown to depict the crowdsourcing of information, whilst another (a T-rex) is pictured tapping the keyboard of a desktop computer, depicting the flow of traditional news media. In the second video (Sukey 2011b) the practice of kettling is introduced for those unfamiliar with the tactic. Again, the Sukey web address is revealed by the T-rex mascot to the sound of the same chiptune track. Like the first video, animated dinosaurs are also used; this time to show the effect of kettling on protesters. But unlike the first, Ankylosaurus (police) and Echinodon or similar (protesters) are used to depict the protest situation. An animated containment is also used to draw the same connections between the act of boiling water and containing protesters.

Fig 7.3 | 8-bit Sukey 1.0. Source: Sukey (2011a)

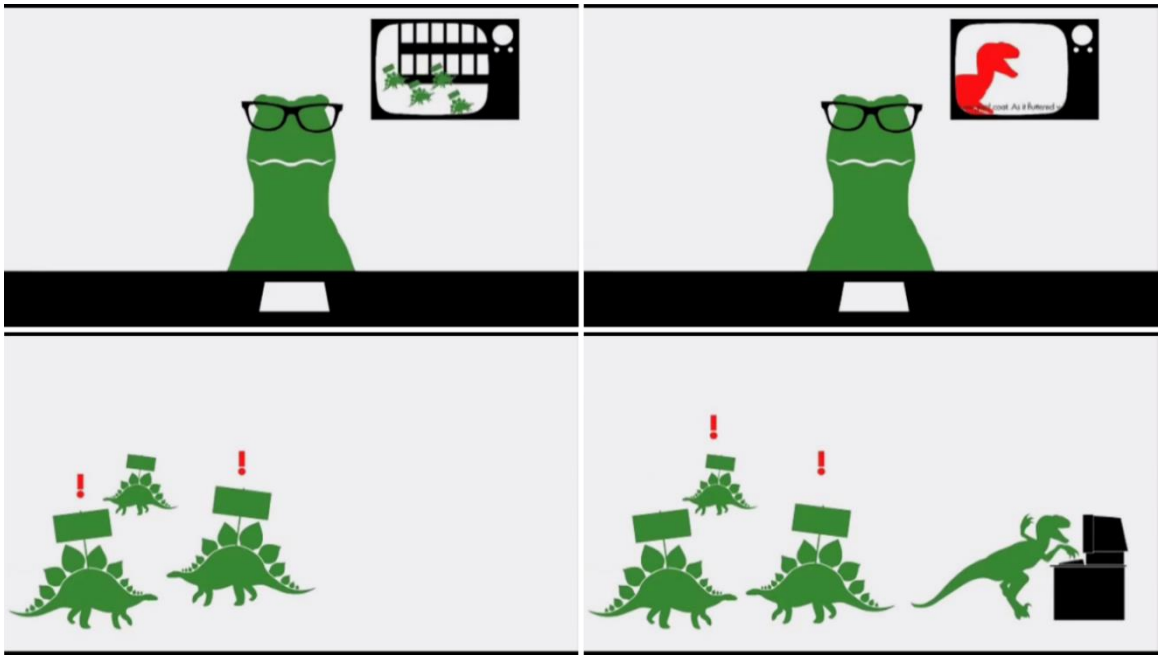


Fig 7.4 | Sukey 'newsdesk'. Source: Sukey (2011a)

It was through these videos and other material (memes, costumes, flyers, etc.) that the green T-rex became the official mascot of the Sukey platform, and thus the official face of the project itself. Although the videos themselves were viewed and shared liberally throughout their time publically available, it was through the T-rex itself that the project gained traction and visibility. As the screenshots show, the animations themselves were not shot in a pixelated style but in a

contemporary, informative aesthetic. Although the pixelated graphics cement Sukey's playful identity in various materials that constitute what Denis Wood would call the 'epimap' (Wood 2010, 273), a switch to a more informative aesthetic is made when direct communication is required. In other words, in Sukey's case 'all the material *not physically part* of the map that shapes the map's reception' (Wood 2010, 273, original emphasis) was a combination of both an 8-bit and informative aesthetic. However, the reasons for this will be made clearer later on in this chapter.

Nevertheless, the one continuity between these styles is the presence of the Sukey mascot variously assuming the role of newsreader and desktop user. Although the T-Rex was a fearful predator, it is somewhat ridiculed in internet culture. Dinosaur Comics (North 2016) and the 'T-Rex Trying' (Murphy 2016) tumblr are just two prominent examples of their comic potential – especially due to their respective aesthetic styles. The depiction of the T-rex in the two videos shares a similar comic interpretation. In another widely distributed image, the Sukey mascot is pictured holding a kettle in front of a London backdrop in a slightly more serious fashion. This picture was used in various news articles on the platform, as well as to promote talks and events the Sukey team held around the UK and Europe. Even when the Sukey website was down for maintenance, the T-rex was still visible – this time as an ASCII design. In all, the Sukey T-rex appears in myriad, but usually comic, forms.

Further, the chiptune song that soundtracks the opening frames of both videos not only emulates the synthesized electronic tracks created for early microcomputers and video gaming systems of the early 1980s, but also directly references the start-up screens of those early systems also. Both console manufacturers (Sega, Nintendo) and games manufacturers (Capcom, EA Sports) have exhibited remarkably similar start-up screens involving a sweeping 'reveal' of a manufacturer logo as well as an accompanying chiptune track; many of which have now become iconic (see; Nintendo

2013, Capcom 2012). In aping the audio-visual dimension of these start-up screens – first emergent in the 8-bit era – Sukey once again takes its cues from early computer culture.

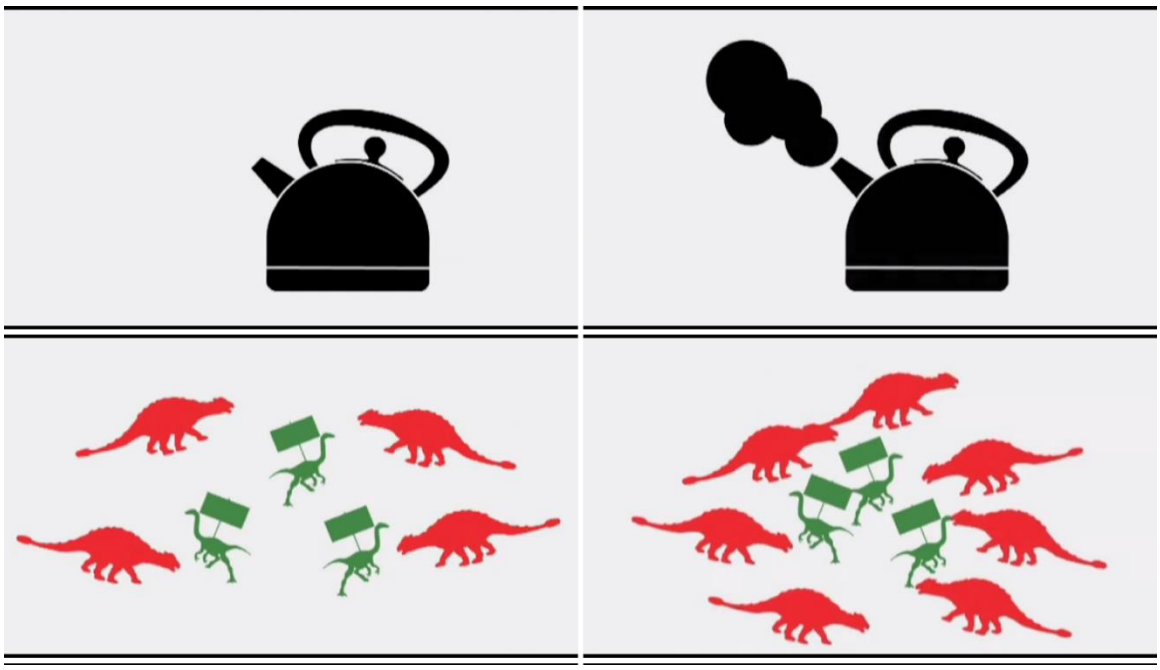


Fig 7.5 | How kettling works. Source: Sukey (2011b)

Fig 7.6 | London Sukey

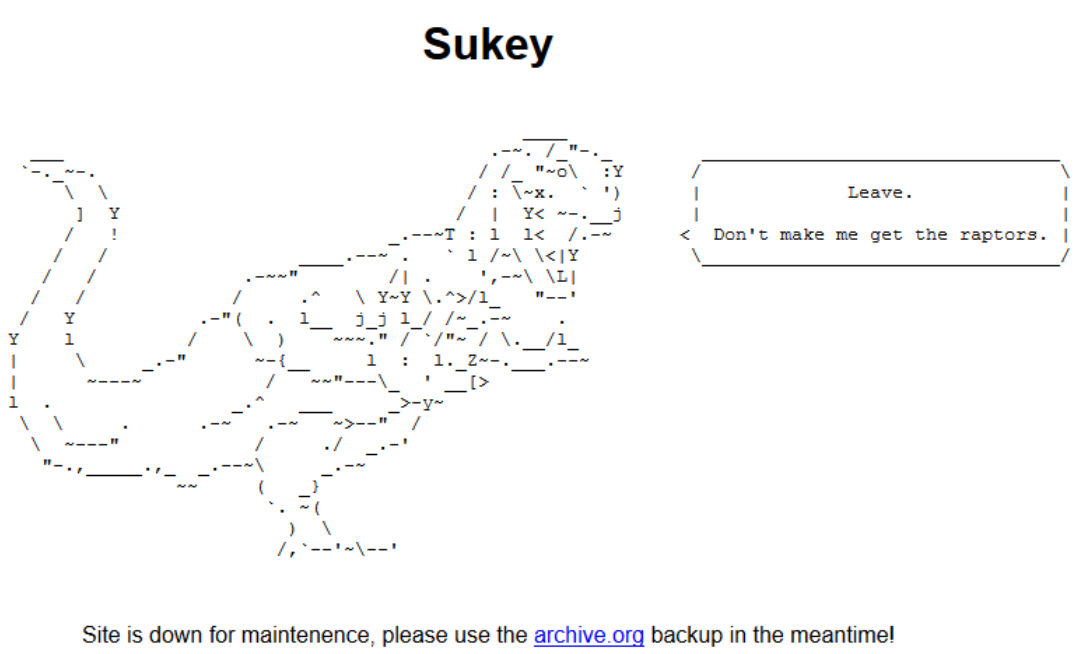


Fig 7.7 | ASCII Sukey

Logo Iterations

From the launch of the original protest map (Sukey 1.0) to a re-designed platform in late 2012 (Sukey 3.0), Sukey had a logo. Alongside the T-rex mascot, it adorned a wealth of material from event flyers to social media accounts and blogs. Most importantly, though, it was used across all iterations of the mobile and desktop application. Like the T-rex it took multiple forms across the length of the project, dependent upon the material. In all cases it was comprised of two parts: a textual element and a variant of the T-rex discussed above. Sometimes both parts appeared in concert with each other. This is evident in the promotional and informational videos discussed above. On other occasions the Sukey text would appear alone, such as on social media accounts. On particular parts of the mobile application, only an adapted version of the T-rex (usually its head) would appear with no text at all. In any case, at least one of these logo elements was present across all aspects of the platform, and at all points in the project. Although these adaptations were made in relation to the size, intent or format of the material it was published for or in, the only

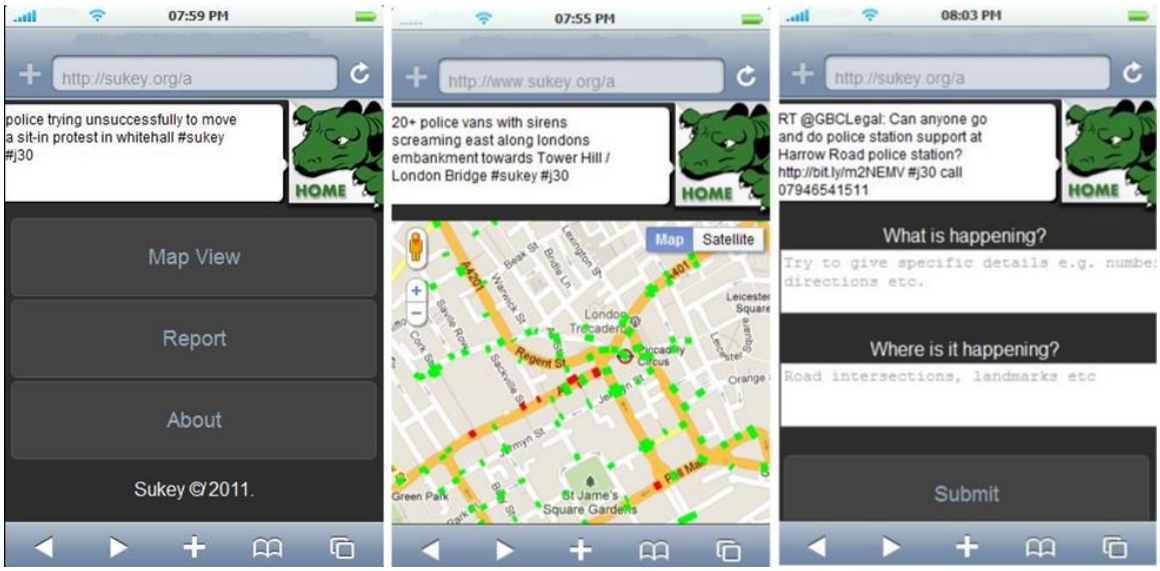
wholesale stylistic changes were made with the commencement of each new launch of the project.

Fig 7.8 | 'Sukey in the Thames' and other variations, including 'Tea Time is Over'

Stylistically, the Sukey 1.0 logo emerged from the original Google Maps mash-up[23] deployed on December 9th 2010 during the House of Commons vote on HE tuition fees. The original inspiration for the T-rex mascot came as a result of the use of various standardized icons on the Google Maps editor. Although these included useful icons for an array of personnel, including police, mounted police and helicopters, one contributor also added a T-rex icon onto the map and into the River Thames. This playful addition sought to cement the T-rex as the mascot and icon of the platform and the entire project. Its addition on the map itself took the platform into new territory. How might users interpret its presence? As a genuine tactical addition aiding safety and navigation? Or, as a superfluous in-joke between developers, friends and supporters?

[23] Still publically accessible here: https://www.google.com/maps/d/viewer?mid=zTI6V5msH5lM.kWXWuAZhTaP8&hl=en with purportedly over 16,000 views at present (March 2016). However, a screenshot taken by myself at a much earlier date shows there had been over 244,000 views.

The first deployment of Sukey 2.0 was during a smaller demonstration at the Egyptian Embassy on January 29th 2011 before being tweaked for a major deployment at an anti-austerity demonstration on March 26th 2011. As a result of the viral possibility of the Google Maps T-rex, a graphic was devised that quickly became known as 'Sukey in the Thames' by the developers. It was used liberally during the main months of the project for a variety of deployments, public-speaking events and workshops. It was even proposed by online users that some designs could be turned into t-shirts (see; the 'Tea Time is Over' graphic). The new, purpose-built platform also integrated the same design into the various parts of the application. For instance, the head of the dinosaur element was used to emphasize the Twitter feed at the top of each page; as if the dinosaur was communicating each tweet itself. The Sukey text itself was absent, with the dinosaur head deemed sufficient to allow user identification of the platform.



Map 7.1 | Sukey version 2.0

In support of the launch of 'Sukey 3.0', a new logo was designed – updating and refining the existing version that had seen widespread deployment across all aspects of the project. The reason for this was that various team members involved in the main iteration of the project had since departed and technical changes to the platform had subsequently been made. As such, it was seen as necessary to provide a new branding that played on the long-standing playful aesthetic but

could still be seen as a marked new phase in the project. As a result, the Sukey text and the dinosaur element were now designed in an 8-bit style – much like the original 'start-up' screen witnessed at the beginning of the introductory videos. This updated logo saw its first and final deployment at an anti-austerity demonstration on October 20th 2012. This version can be seen both as a consolidation of previous iterations and also a marked ludic evolution, affording a more holistic interaction with the platform.

Fig 7.9 | 8-bit Sukey 2.0

Once again, it was used across multiple material and in different forms. Like the previous iteration, it was decided that the new 8-bit dinosaur element would also be used as a header on most pages of the application; from the 'intro view' to the landing page. For this update, the Twitter functionality was removed entirely from the platform and replaced by a static, textual header ('The Sukey online tactical support team is ready and standing by') as opposed to a scrolling, live update of tweets.

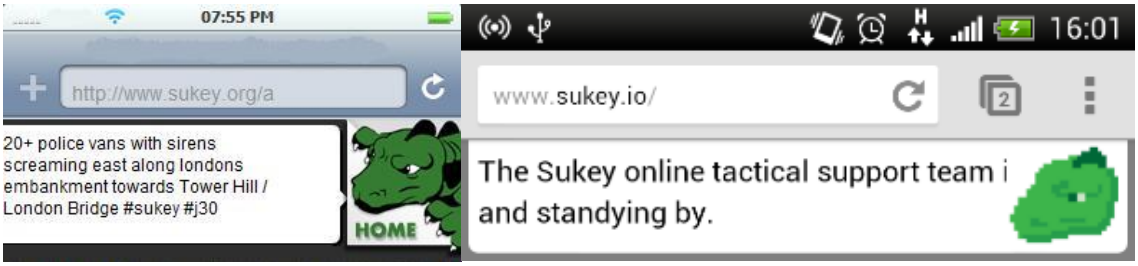


Fig 7.10 | Sukey version 2.0 header (left) with Twitter integration. Sukey version 3.0 header with static text (right)

Survival Styling

This final logo was launched alongside a 'Sukey Survival Guide' distributed in multiple formats (pdf, jpeg) via the Sukey blog in celebration of the re-launched platform (Carlisle 2012, n.p.). The guide was intended to give protesters helpful advice when attending demonstrations and using the application. All were designed in the same pixelated style.

An 8-bit video was also meant to have been launched alongside them, according to developer X (interview, February 17th 2015). However, due to the labour involved, it did not publically materialize. Having met in 2011, strategist X then began to lend advice to developer X, in anticipation of the re-launch (interview with strategist X, May 3rd 2015). They then helped to provide the written copy for the 'survival guide', as a way of expanding the aims and appeal of the platform beyond a narrow capacity to help activists avoid police containment (interview with strategist X, May 3rd 2015). As much of this labour was unpaid – despite taking considerable time and energy to coordinate – the limits of the platform were apparent. The survival guide was thus an attempt to put out a coherent promotional message of what the platform could assist in providing activists.

Fig 7.11 | Survival Guide (p. back-front, 1-2)

As opposed to earlier videos incorporating various pixelated elements this new release was designed entirely in an 8-bit style; edited by the same individual to compliment the survival guide. Despite attempts by developer X to show me the video on two separate devices (a desktop and a laptop) the video in question remained elusive (interview with developer X, February 17th 2015).

However, I have no reason to doubt the existence of such – bearing in mind the dissemination of the guide.

The survival guide itself was intended as a direct accompaniment to the platform – especially for those on the ground in a demonstration. Thus, it is worth going into it in some detail – both because of its meticulously designed 8-bit style, and for its obvious operational purpose. In other words, the guide was not simply a promotional tool for the new launch, but a valuable aid for the platform's use. This marks it out as somewhat different from other such material.

The decision to use pixelated graphics for the survival guide can be interpreted in multiple ways. Although Sukey had deployed various 8-bit graphics throughout the project before, the main logo and accompanying dinosaur element were not designed in such a style. Whilst suggesting that the Sukey team had long employed an 8-bit style to various elements of the platform, no informational content had been produced with such an aesthetic before. As the Sukey team wrote in the guide itself:

> We've gathered important tips to help you exercise your civil rights and plan for an effective demonstration. We cover basic survival – hydration, food, and first aid – as well as tips on uploading media, your legal rights, alternative communication, and using Sukey to send and receive real-time updates.

Thus, the guide was indeed to be a comprehensive summary covering all the main aspects of protest in the UK; from 'basic survival' to communication. On pages 3-4, Sukey inform readers of the need to 'stay hydrated' and 'maintain your energy' during a demonstration; involving the drinking of a litre of water 'for every hour of protesting' whilst eating 'bananas, almonds, chocolate, or high-energy snacks' to 'provide energy over the course of the day'. On pages 5-6, the team suggest that activists 'connect and report regularly' to 'keep informed about what is happening at the demonstration', and that the sharing of 'observations and experiences' during the event will ensure that not all information becomes 'filtered through others who may not share

your values'. 'This is also where Sukey comes in' the guide then adds. It is through the platform, it is suggested, that 'we [the Sukey team] help gather and verify information and get it to those who need it most'.

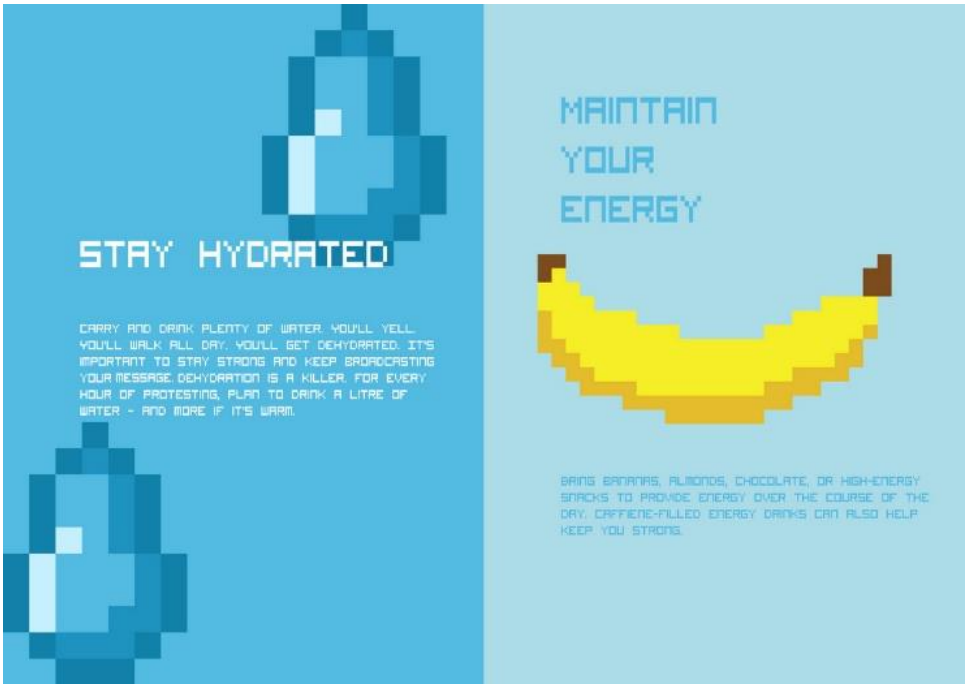


Fig 7.12 | Survival Guide (p. 3-4, 5-6)

In other words, the guide outlines the essence of the platform to those reading: Sukey is there to ensure activists on the ground (i.e. 'those who need it most') receive the navigational information they need. Importantly, the guide emphasizes the necessity of receiving information beyond or outside of particular, 'official' channels. Whilst this is left unexplored, the implication is that information from the police, event organizers or student unions (SUs) is not necessarily always reliable for activists. Sukey's principle intention, throughout each iteration, was the establishment of an alternative, crowdsourced and verifiable information flow outside of institutional formations. As the guide further suggests:

> Use Sukey to upload photos and share information about what is going on around you. Your photos and reports will feed into a map in real time, informing everyone about where the demonstration route is and where trouble could be brewing – allowing you to avoid it.

Although the blurb broadly outlines previous iterations, it also emphasizes the photographic features of the new version, suggesting that users can contribute to the activity by sending photographs to the team rather than simply tweeting textual updates. As a result of this emphasis the following page suggests that users 'know their rights' in regards to photographic, audio and video evidence. In particular, the guide alerts readers to the illegality of taking photos within the Westminster area (that is, in Parliament Square) – and a way around the law:

> …throughout Westminster written permission is required to take photographs or make audio or video recordings. Police will enforce these regulations. People with press cards are exempt. To enquire about obtaining a National Union of Journalists press card for use in the UK send an email info@nuj.org.uk or visit nuj.org.uk to learn more.

And that:

> Outside of Westminster, you are not prohibited from taking photographs in public places (other than in very exceptional circumstances). Also, there is no prohibition regarding photographing public servants – including those who wear uniforms. Police are not allowed to obscure their identification numbers (if they do, that's a newsworthy thing to document and share). And police officers may not delete digital images or destroy film.

These details no doubt allowed activists reading the document to become more aware of the rules and regulations regarding photography and other forms of data capture during protest event; an issue I was also keenly aware of. Although Sukey had always allowed users to upload images to the platform, this was previously only capable via the Twitter functionality. That is, not directly within the platform. As the cover page shows, the 'upload a photo' feature took equal prominence as a specific page on the platform alongside the map and reporting functionality.

This expansion of the platform's key features was an identifiable shift in Sukey 3.0; one consistent with strategist X's strategic involvement. Part of their interest was how the platform could include other functionalities, serving a variety of situations, seeing as the wider activist landscape had evolved since the launch of Sukey 1.0. This desire to explore other functions and knowledge capture processes was something touched on with developer X also. They discussed the possibility of launching a content-less platform to provide only the architecture for some of the tasks Sukey was known for (communication, map, image uploading), so other users could make use of it in whatever scenario they envisaged (interview with developer X, February 17th 2015).

A subsequent page documents the need to bring a first aid kit packed with plasters, bandages, antiseptic wipes, spray or cream, painkillers and saline solution; further noting that those with 'up-to-date first aid training' should 'consider using [their] skills and becoming a demonstration medic'. Whilst such aspects of the protest event were ancillary to the Sukey project, the guide makes a concerted effort to cover all aspects of attending a demonstration. The guide attempts

to cast the platform as a helpful tool amongst many – one with a set of specific, but interconnected, functions.

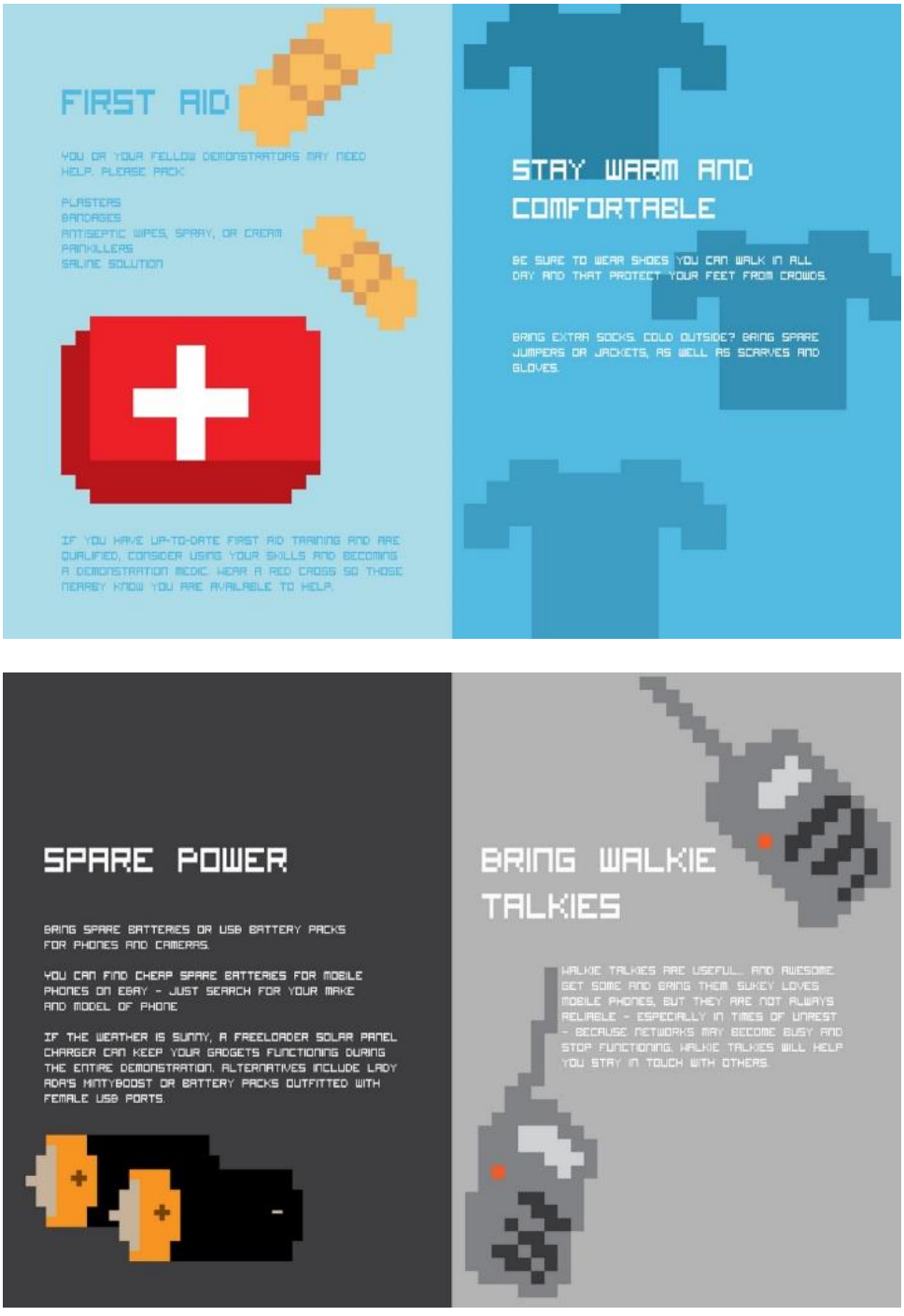


Fig 7.13 | Survival Guide (p. 7-8, 9-10)

The next set of pages bring the topic back to communication once again. As page 9 mentions, spare batteries or 'USB battery packs' can help keep any phones and cameras charged up for the

duration of the event. Further, '[i]f the weather is sunny, a freeloader solar panel charger can keep your gadgets functioning during the entire demonstration'. For others, this sort of information, whilst seemingly banal, might have made the difference between remaining connected during the final hours of a demonstration and being completely out of the loop. As a result, perhaps meaning the difference between being contained or not.

Somewhat surprisingly the guide also suggests that readers bring walkie talkies as whilst 'Sukey loves mobile phones…they are not always reliable – especially in times of unrest – because network may become busy and stop functioning'. Walkie talkies, therefore, 'will help you stay in touch with others'. Every other page of the guide is geared to help smooth out the contingencies and operational unknowns for activists during protest events. This page is no different; with so many people desperate to follow updates over 3G and 4G local networks invariably slow. As a result, communications might fail to reach those in need, in time. Just like the carrying of a first aid kit, spare batteries and plenty of water, walkie talkies also aid in the maintaining the safety of those participating in a demonstration.

But unlike the other pages, it also presents Sukey as fallible. Whilst legal restrictions regarding the taking of photographs in the Westminster area might curtail updates at particular times (although this rule is relatively unenforceable *en masse*), the slowdown of the mobile telecommunications networks demands a workable alternative for those wanting to maintain communication with fellow activists. This is an aspect of the project that will be returned to in the conclusion.

Fig 7.14 | Survival Guide (p. 11-12)

The final pages of the survival guide focus on an evidently more playful dimension to proceedings – offering up some crafty advice to protest attendees. As it reads:

> Bold colours and symbols are important during demonstrations. Many movements have their own banners or picket signs. If you're making your own here are some things to consider:
>
> - Make your banner light and comfortable to carry
> - Bold colors [sic] and symbols will make your banner stand out
> - Get a creative friend to help make your design memorable (are you the creative friend? Offer to help others!)
> - Post, tag, and use a creative commons zero license to share so that others can use and build on your work (flickr or openclipart.org are great spots to post)

Once again, the platform's photographic functionality is brought into focus. Unlike in previous iterations, Sukey 3.0 'emphasized 'fun stuff like banner rating' with users who spot a banner are

invited to 'take a snap and upload it via Twitter with #Sukey #banner and the banner text or using http://sukey.io/.' Although similar initiatives were active during previous versions, they were primarily limited to side-projects such as 'Sukey Dating', rather than integrated into the main platform.[24]

The pixelated aesthetic is therefore not strictly a game-specific one – as Sukey has shown. Despite being used for online flash titles and indie simulators; it was also applied to a navigational platform designed to be deployed in the riskiest of situations. 8-bit culture pervades practically all media, even into spaces and contexts that might seem anathema, or a 'distraction' to, the content of the media itself. Even in a so-called 'survival guide' disseminated in order to draw attention to the features of a demonstration, this 8-bit aesthetic is put to use. In other words, this ludic aesthetic is not confined to the world of videogames but is equally visible in non-game contexts – even in communications designed specifically to convey critical operational information regarding safety, mobility and use.

Navigational 'Pivot'

It was suggested in the previous section that the Sukey 'epimap' comprised a combination of aesthetic styles, rather than being exclusively 8-bit. Despite this, I maintain that the platform operated with a 'coherent aesthetic' – a term introduced by Galloway (2012, 46). This transition between a pixelated style and a more informative, almost instructive aesthetic is perhaps the big clue to the difference between the platform and other protest games/simulations. Although the survival guide discussed above was designed in a pixelated style the key aspects of the platform itself, notably the mapping application retained a default online map aesthetic. Thus, unlike the games introduced at the beginning of this chapter (*Kettle*, *Riot: Civil Unrest*), Sukey had the

[24] Offering the possibility for kettled protesters to hook up with other contained activists, in order to turn the otherwise oppressive space of the kettle into a distinctly more amorous one. See the @SukeyDating Twitter account for more details.

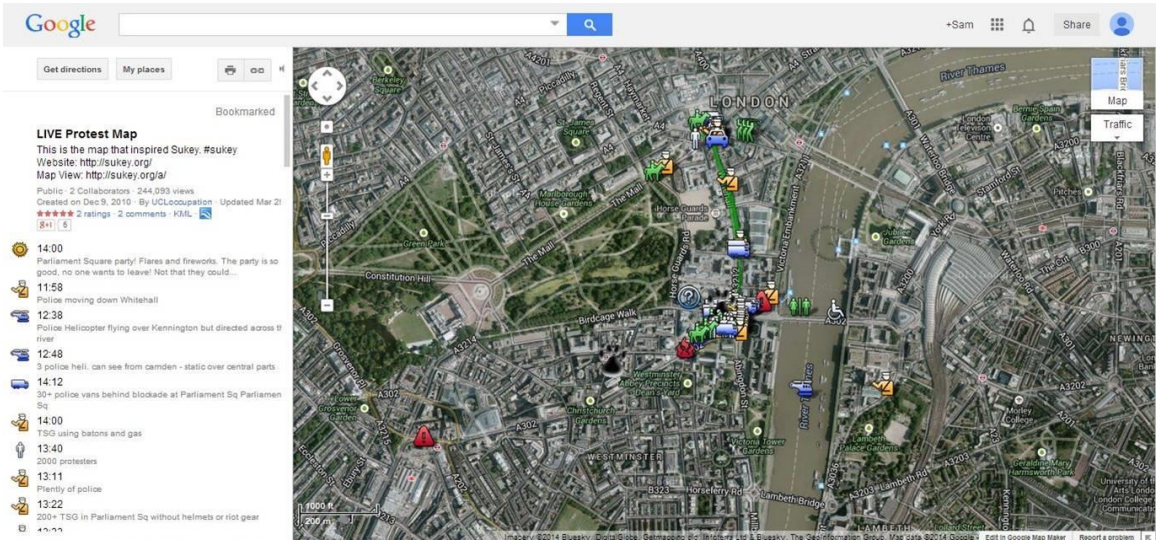
capability to switch between styles depending on form, content and deployment. Most importantly, it reserved this default cartographic style for navigational purposes.

This is because Sukey operated as a 'navigational interface' (Lammes 2011, 5) and as such was oriented both *inwards* towards the operation of a digital, mobile device and *outwards* towards the generation of protest manoeuvres. It could be said, then, that the use of the 8-bit style in video explanations and other informative material could potentially detract from, or even obscure, the instructions themselves. Returning to the survival guide momentarily, one could therefore argue that the aesthetic itself fails to articulate the necessity of complying with the various tips offered up by the Sukey team. In other words, that with the pixelated style, one could be drawn to thinking the content itself – emphasizing the need to drink lots of water and being aware of the illegalities of taking photographs in certain locations, for instance – did not need to be taken seriously. Its association as an aesthetic wedded to videogame design therefore poses an operational challenge: are the tips merely playful suggestions to otherwise enhance the 'game' of protest? Or, in fact, do they alert readers to essential practical information? In any cases the pixelated aesthetic was chosen to convey this operational (but not navigational) information.

Yet this is not an aesthetic choice of 'either' 8-bit or a 'clear line' style. As evidenced, they exist in tandem yet also in also in tension with each other. An 8-bit aesthetic is no necessary barrier to information flow – cartographic or otherwise. Indeed, I argue it has been used as a way to entice them into reading operational information prior to a demonstration. Its playful design, therefore, only enhances the delivery of the content rather than distracting from it.

No such aesthetic decisions were taken with the map itself. However, this was not a decision made because of a perceived lack of integrity with the 8-bit style, but due to the technical limitations of available mapping platforms at the time. Each iteration of the Sukey platform was designed with a different digital mapping backdrop. In version 1.0 it consisted of a Google Maps mash-up. In version 2.0 – now a fully-functioning web application – a Google Maps layer comprised the

backdrop of the platform. For Sukey 3.0, Google Maps had been substituted for an alternative layer by OSM. In each case, regardless of the proprietor, the default mapping style was selected. In Google Maps this allowed users the option to use one of two styles: either standard map or satellite imagery. In OSM the user is given the option of 5 in-browser map styles or 'layers': Standard, Cycle Map, Transport Map, MapQuest Open and Humanitarian; the latter of which was launched after the Sukey project became operational, in September 2013 (Wood 2013, n.p.). Whilst there are variances in detail, colour and emphasis all layers in OSM and default options in Google Maps show road names and types; in other words, the most important of navigational features.

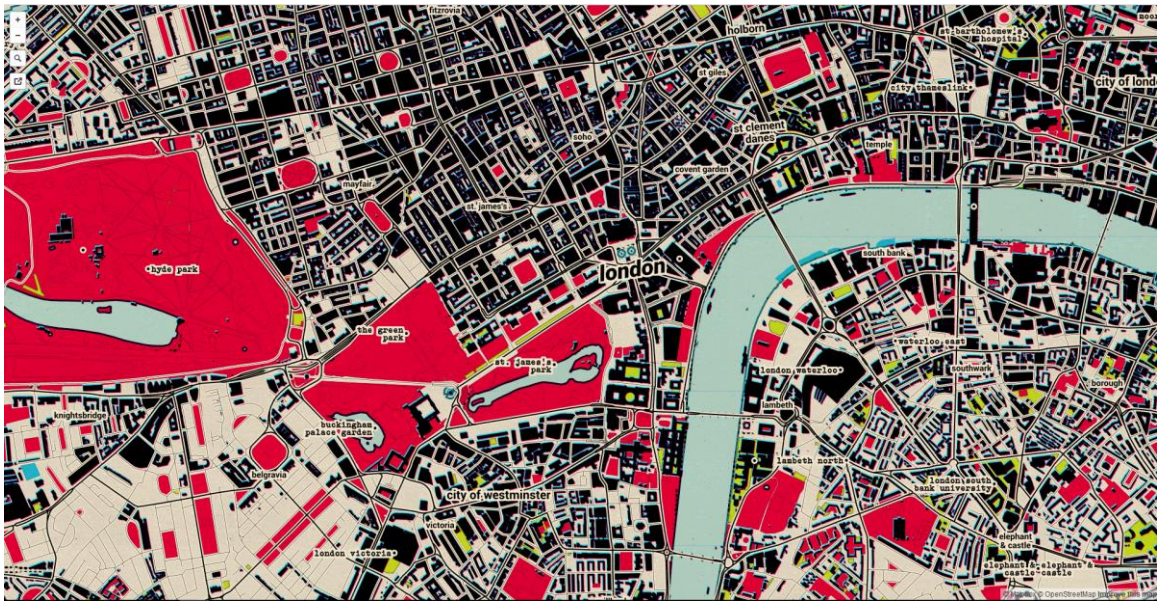


Map 7.2 | Sukey version 1.0

Only in recent years, with the rise of platforms such as Mapbox, have non-default mapping styles become more widely available. For example, on Mapbox alone there are 15 custom pre-set map styles ranging from 'Streets' (to emphasize street types and names) to 'Run, Bike, and Hike' (for leisure activities). In essence, these are similar to default Google Maps and OSM styles for varying navigational duties such as general reference to commutes. Further, on Mapbox and other online platforms (OSM included), there is the option to design your own for whatever desired cartographic purpose. The difference between the Mapbox platform and OSM, however, is that a

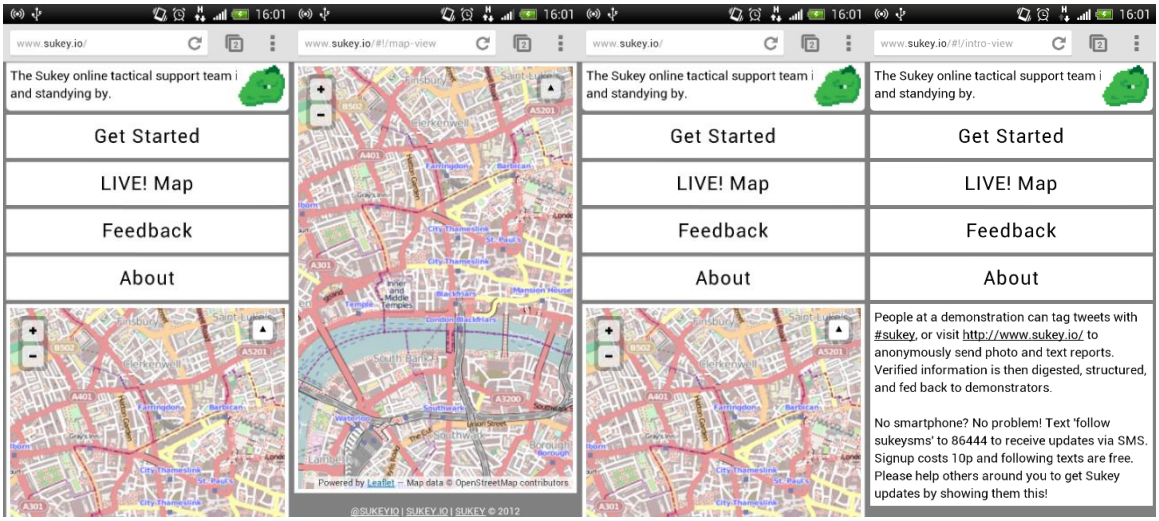
greater number of these custom styles have made their way into the default toolbox for map users and editors.

Mapbox also allows users to pick a number of more playful styles, most notably; 'Comic!', 'Wheatpaste' and 'Pirates'. However, none of these allow users to navigate particularly well using such styles. Although the 'Comic!' style includes some building labels and all settlement names it forgoes road labels altogether. In 'Wheatpaste' – a Roy Lichtenstein-inspired pop art style – there is a similar lack of detail despite the attractive modern collage aesthetic and intense colour scheme incorporating lime greens, aqua blues and electric pinks. Whilst 'Pirates' does include street names and other such necessary navigational labels the muted green/brown colour that pervades throughout makes distinguishing between road types incredibly difficult. Once again, these playful styles are of limited navigational use. However, one would suggest that neither of these is designed with navigation in mind. Instead, each is intended to be a fun backdrop for custom maps designed by Mapbox users. Although cartographic data can still be displayed in such styles, it is more for visual and interpretative purposes only.



Map 7.3 | Mapbox 'Wheatpaste' style

The reason for this discussion is that Sukey – despite the ludic tendencies clearly evident throughout the entirety of the project – maintained a clear, default map style in all iterations. At no point did a more playful aesthetic extend into the cartographic plane. The closest any pixelated graphic came to imposing itself on the map is in Sukey 3.0; when the dinosaur logo can be seen on the intro view and the landing page. In the case of the former, it could be said that it forms part of the navigational 'perimap', and in the latter, the 'epimap', but never the map itself. In others words, it may account for the elements that surround the 'map image proper' or the broader material 'not physically part of the map' but otherwise involved in 'shap[ing] the map's reception' (Wood 2010, 273). That is, the perimap or the epimap. The exclusion of it from the cartographic frame itself is telling of a navigational affordance or duty integral to the mapping platform in this instance.



Map 7.4 | Sukey version 3.0

The decision to switch from Google Maps to OSM between Sukey 2.0 and 3.0 is further telling of the navigational necessity mentioned in relation to Mapbox above: distinguishing between road types. As I have suggested elsewhere, '[u]nlike in Google Maps, OSM is able to render ten road types, including four where vehicles do not have right-of-way' (Hind 2015a, n.p.). This I further suggested was 'critical at the time for protesters desiring to avoid police containments' (Hind 2015a, n.p.) as the distinction between A-roads, side-roads, park paths, cycle routes, alleyways

and arcades could invariably facilitate a greater suite of pedestrian manoeuvres during a demonstration. The use of Google Maps where such distinctions are either (a) not made at all or (b) made aesthetically ambiguous or imperceptible therefore result in a far less effective mapping platform designed to facilitate mobility. Indeed, as I argue in chapter 9, they actively hamper the use of side-roads and alleys in central London when 'splintering' from A-to-B protest routes.

The navigational interface, therefore, is the point at which this ludic tendency 'pivots' between a playful aesthetic (pixelated graphics), and a choreography of protest manoeuvres. The utilization of default mapping styles is absolutely integral to this pivot and enables the facilitation of pedestrian movement. To reiterate, however: this was not an 'either/or' scenario in which an 8-bit aesthetic was sacrificed for a more utilitarian design, but one precipitated by a situational need as it presented itself. The shift from Google Maps to OSM further facilitated this movement, ensuring that those who used the application were able to distinguish between various road types that would enable egress from possible, emergent containments and ensure the safety of those participating in the protest.

Still, consider for a moment if the aesthetic had continued into the map itself. As Greg Elmer (2012, n.p.) has previously argued, Sukey's reliance on a number of technological features already poses significant navigational challenges:

> GPS and its common map interfaces routinely offer incorrect or frustratingly imprecise locations, which the developers of Sukey themselves note commonly extends upwards of 50 metres. Given the narrow corridors and cramped urban environments that police commonly harness for their kettles and dead ends, a map-only interface could prove to be a disaster in the loud, tense and cramped conditions of urban protests. As new versions and code have emerged, Sukey has sought to integrate aggregated Twitter reports to provide text based updates and tickers with warnings to individual users, thus lessening the reliance upon maps.

Thus, the integration of such features with a pixelated aesthetic – anathema to the clear, modern design style of contemporary computing – is a recipe for navigational failure. At least, it was at the time with few other workable ludic options. This is before any consideration of the risk involved in navigating a protest event: navigation becomes impossible in the first instance with the integration of pixelated roads, buildings and other imprecise but nonetheless coherent elements. 8-bit, it might be argued, is not a navigational medium. This 'invitation' (Lammes 2016, 6) to interact with the map, whilst ostensibly ludic, would not amount to a *navigational* invitation. In such a case, the platform fails in choreographing movements and/or manoeuvres for the purposes of participating in a demonstration. Put otherwise, it does not operate as a navigational interface. Maintaining the default cartographic style ensures that the interface affords navigation, rather than inhibits it.

In order to provide a little more context to this navigational 'invitation', I will end this chapter with a brief detailing of the desired message structure users were encouraged to send information in. This constitutes another aspect of the Sukey 'engine' alongside the map and paramap materials.

Consider the following tweet from a demonstration at which Sukey 3.0 was live:

> Mounted police behind a couple of rows of police, blocking the way to Whitehall. #demo2012 #Sukey
>
> @Shakteh 13.45 PM – 21 Nov 2012[25]

As Philip Agre (1994) would suggest, for a 'unit' of data to be theoretically operational it must be indivisible, unique, replicable and compoundable. Without such it ceases to impose itself on an activity. In this case, on the act of navigation. At present – as a single, composite message – the above is not indivisible, unique, replicable or compoundable. The first step, therefore, is to take

[25] The @Shakteh Twitter account is no longer publically accessible. Manual retweets such as those by user @superfurryandy, however, do remain accessible (Bear 2012). Original tweet content and metadata derived from a Twitter scrape request of all tweets containing #sukey on November 21st 2012, using the now-defunct ScraperWiki tool.

apart the above so that this process of identifying the units can begin. At present, the message is a single whole. It comprises, simply, of one tweet. Although the content can be read and acted upon without much thought by a human, in order for it to be parsed by a computer and accurately depicted (if necessary) on a digital map, the tweet above has to be taken apart.

As part of the platform's promotion, and in order for this structuring process to be performed more efficiently, the Sukey team instructed activists desiring to submit information to do so in a particular format. This was primarily communicated through social media accounts in the run-up to a deployment, and was the same for each iteration (for example, see; Sukey 2011c, 2011d, 2011e). Tweets composed in the correct format were able to be read, parsed, verified and communicated back to the crowd more easily than those poorly formatted. In short: they could be captured by the platform. The abstract units can be easily summarized as: *who, what, where, when*. The above is an example of a near-perfectly structured navigational tweet as it contains all of these elements: *who* (mounted police and police), *what* (blocking the way), *where* (way to Whitehall) and *when* (13.45pm). The only issue is that the user has not specified which way the mounted police are blocking to Whitehall. However, as this tweet was sent during 'Demo 2012', the last student demonstration fully-organized by the NUS, it can be reasonably assumed that 'the way to Whitehall' is the protest route itself. As a result, this absence of detail does not, on its own, cause an issue for the Sukey team.

Some of the navigational information is derived from the tweet content; such as the *who*, *what* and the *where*. The remainder is derived from metadata attributed to the tweet (*when*). Although Twitter users have the option of geolocating their tweets many do not – especially during demonstrations where privacy issues pervade. In a study of a college basketball riot in the US, only 0.2% of tweets referencing it were geotagged out of a comprehensive total of 12,590 (Crampton et al. 2013, 134). In general, geotagged tweets consist of a very small percentage of all possible tweets (usually between 2-5%), thus resulting in sampling issues concerning volume, populations

and representation (see; Hind 2012, Zook 2012, Steadman 2013). In many cases a simple geolocation cannot and should not suffice for the wealth of possible geographical dynamics at play in every social media-ted event, hence why Crampton et al. (2013, 132) suggest we need to go 'beyond the geotag' to explore the 'multiplicity of ways that space is implicated in the creation of such data'. Such 'fixations' on geotagged data 'undergird falsely universal claims about the world and the people who inhabit it' (Leszczynski and Crampton 2016, 1), thus, a

> …more critical and relational approach to using geotagged social media data requires grappling with the data in a way that doesn't assume that the data, and in particular its explicit geographic reference, speaks for itself. It is important to not take the wealth of data contained within each individual data point – or…tweet – for granted by over-privileging the fact that each point can simply be placed on a map. (Shelton 2016, 7)

What is also needed in this case, then, is a *direction*. Deriving both location and travelling direction from the tweet content is possible – a geotag cannot give us anything more than a (supposedly) accurate geographical location. Thus, the Sukey team encouraged users to incorporate not only geodata into their tweets, but also directional data too. In doing so, this aided the team in being able to code safe exit routes around particular known incidents such as police containments. However, this was not always adhered to. Such messages therefore retained a lesser operational importance with this detail missing. This dynamic will be discussed at length in chapter 8.

If the tweet was missing several of the unit details it might have been markedly useless. Consider another interpretation of the above situation:

> Two lines of polices causing problems on the protest route near Downing Street. #demo2012 #Sukey

Can the same units be determined? Yes and no. The *who* (police), the *what* ('causing problems'), the *where* ('on the protest route near Downing Street') and the *when* (also derived from

metadata) are all present but in vaguer forms. No reference is made to mounted police, who present a different navigational obstacle to protesters and demand a different approach to movement, welfare and tactics. The *what* makes no reference to the nature of the issue being tweeted; in this case a blocking of a particular kind and direction of movement. The *where* is entirely devoid of a street name or proximal landmark, only obliquely mentioning a location 'on the protest route near Downing Street'. The *when* remains functional so long as the Twitter metadata is correct. Thus, the work required to parse the message for operational and navigational clues is either markedly increased or the message itself is operationally useless, for it can provide no direct use to those requiring navigational information during a demonstration. In other words, the moment cannot be appropriately captured.

By their nature these four components – *who, what, where* and *when* – are meant to be indivisible, unique, replicable and compoundable. In reality this is perhaps less true. Social media data is often defined by its 'fuzziness', with the *who, what, where* and *when* of every navigational tweet difficult to capture definitively. Yet, as these units are relational forms easily combinable with other such units, their indefinite status does not necessarily cause operational problems for those desiring to capture the events in question. Nevertheless, as the above examples show, vague and incomplete data ordinarily requires more data analysis. As a result, the capture and mapping of such moments becomes increasingly inefficient and unresponsive to otherwise fast-moving, time-critical events. The parsing, verification and communication of such information is therefore nothing without an effective data capture procedure. In the midst of a protest event this becomes evidently problematic for users of the Sukey platform reliant upon it to keep safe and mobile.

The above can, therefore, be considered a kind of 'territorial articulation'. The Twitter message parsing system enabled the Sukey developers to comprehend tactical communications without a hitch. The only reason why this worked, however, is that the activity unit-series structure had been determined. This is a critical part of making territory legible – an integral part of the navigational

engine. What is historically unique about these efforts is that 'these practices', of capturing and verifying navigational data, 'break from conventional science models in which the legitimacy of the information is in part meant to be assumed because of its delivery or production by an "expert"' (Elwood and Leszczynski 2013, 552). In Sukey's case, this 'expertise' was derived from an array of on-the-ground sources, as well as the developers of the platform.

Conclusion

In this chapter, I have sought to draw connections between different elements of the Sukey platform. In essence, it has been to argue that Sukey maintains a 'coherent aesthetic' throughout many distinct iterations of the project; doing so in order to advance an 'incoherent politics' (Galloway 2012, 47) through the generation of spatial manoeuvres during protest events.

This coherent aesthetic, I have argued, revolves around a graphic style referred to as '8-bit'. This directly references a suite of motifs common in videogame development during the 1980s, and taken up again by indie games developers. Both Increpare's *Kettle* (2010) and Leonard Menchiari's *Riot: Civil Unrest* (2016), for instance, use an array of pixelated features in their titles to depict characters and landscapes. Similarly, in video and textual material produced for promotional and operational purposes, Sukey employed chiptunes, pixelated start-up graphics and animated characters to create a coherent aesthetic around Sukey as a platform.

Nevertheless, on many occasions this style was substituted. Most importantly it did not see use as the default map style. I argue that with 8-bit communicational clarity is lost – particularly important for a navigational platform designed to aid in the mobility of those who use it. However, its use in an operational 'survival guide' designed to give activists helpful tips on what to bring with them to a demonstration, how to conduct themselves and what to avoid, promoted the platform as playful tool offering users an array of interactive features.

Thus, these pixelated elements only extend as far as the 'perimap' and the 'epimap' (Wood and Fels 2008, 192) – the material that shapes the communication of, and interaction with, the map itself. Instead, 'default' map styles are deployed – despite the prevalence of more ludic layers on other online mapping platforms such as Mapbox. However, upon interrogation, it becomes apparent that these styles are similar in navigational capacity to an 8-bit aesthetic in that they operate poorly for those desiring to use any such digital map in order to navigate the real-world. Instead, such styles are better for data visualization and aesthetic experimentation.

The shift from using Google Maps to OSM was further predicated on this navigational necessity. Although default styles label many different types of roads (A, B, paths, etc.), OSM has a much finer granularity. As such, it is better suited to protesters navigating city streets on foot. Further, that distinctions between park paths, cycle routes, alleyways and arcades allow for the generation of a much larger suite of possible protest manoeuvres, otherwise stunted by the lack of representation and distinction on the map itself.

Lastly, in detailing how a Twitter message to the platform is ideally composed and parsed, a little more on the nature of navigational communication is garnered. This will be taken up in more detail in the following chapter as the absence of an extra-institutional navigational knowledge flow is explored. In conclusion, then, Sukey is a navigational interface. It allows for a 'pivot' to take place between a coherent aesthetic commitment (pixelated graphics) and an incoherent, or otherwise open-ended and contingent, generation of protest manoeuvres to occur.

Chapter 8 | Through the Windscreen

The previous chapter detailed the aesthetic coherence to the Sukey project, as well as the navigational affordances of the platform. Moving forwards, this chapter will consider how navigational knowledges were accrued, and calculations made through use of the platform. In essence, to explore how users were able to both sense (visually or otherwise) and 'make sense' (compute, articulate, order) of the moments and incidents mediated by Sukey. This will involve contrasting how the practice of observation and articulation, following Agre's (1994) capture model, contributed to the making legible of the protest terrain with the platform active and dead. This process demanded that activists paid, and divided, attention to the activities of two sets of actors: the police and fellow protesters. This allowed for activists engaged with the platform to gain knowledge of particular kinds of manoeuvres (containments, etc.) that would affect their own navigational intentions.

These navigational knowledges can be divided into three temporal fields or 'anticipatory layers', broadly commensurate with the categories outlined by Rose-Redwood (2008). Each of these correspond to a different layer of cartographic information important for the production of navigational knowledge during a protest event. The first of these concerns the mapping of the built environment/street layout and is commonly performed by major mapping companies or organizations such as Google Maps or OSM. The Sukey platform relied first on Google Maps and then on OSM to provide this information. The second of these concerns the mapping of temporary features (metal barriers, fences) present only for the duration of a protest event. In all demonstrations this function was typically performed by a suite of actors including organizers (TUC, PA, NCAFC), political parties (Greens) and journalists.

The third of these concerns the mapping of *active phenomena*. Unlike the built environment and temporary structures, these 'active phenomena' consisted of bodily collectives; police, protesters,

journalists and officials, as well as the mapping of humans with animals (police horses), humans in vehicles (police vans) or humans with objects (signs, banners). It was in this layer that Sukey sought to cartographically intervene, attempting to map various manoeuvres and capture particular moments that would contribute to the navigational knowledge of activists.

What distinguishes each of these forms from the other is the degree of *anticipation* required to map them during a protest event. In other words, the lengths to which one must go to either 'prepare' for or 'pre-empt' particular scenarios (Anderson 2010, 792). Whilst the built form and street layout will change over a period of months, demonstration routes will be publicized weeks in advance, and physical additions to the urban fabric will likely be made in the hours leading up to a protest event. In the final anticipatory layer, so-called active phenomena are exactly that: 'active'. As a result, there is precious time to capture these bodily collectives cartographically to be of navigational use to protesters. In theory, the desire was to map such phenomena in seconds. In practice, the Sukey platform was able to respond within minutes – a herculean effort for a cartographic project with few resources.

However, what binds these layers in relation to each other – from the perspective of the Sukey platform – was the necessity of assigning a risk value to each. Predominantly, this risk concerned the possibility of the realization of containment manoeuvres. As such, these 'risk maps' – akin to Amoore's (2011) 'data derivatives' – became critical to ensuring the safety and mobility of users. Central to this risk mapping was the utilization of a three-colour system designed to visualize the extent to which junctions were passable during a protest event. Junctions coloured green allowed free movement, those in blue indicated movement was partially possible, whilst those in red indicated the junction was entirely blocked. If several exit routes were blocked, this would usually indicate a containment was in place. Without the Sukey platform active, it was argued, few protesters would know definitively whether a route was blocked. With the cartographic evidence to prove it, the platform became critical to ensuring the safety and ongoing mobility of protesters.

To aid, in other words, in the protesters' ability to act on 'emergent and unfolding futures' (Amoore, 2011, 27).

In the period since the demise of the Sukey platform, the generation of navigational knowledge *vis-à-vis* active phenomena has disappeared almost entirely. I argue that a new generation of student activists (the 'second-wave') lack the option of using a navigational platform such as Sukey. As a result, extra-institutional knowledge regarding active phenomena during episodes of 'extra-institutional disruption' (Scott 2012, XIV) has been left unrealized. Instead, institutional protocols – such as buddy systems and university blocs – have become further entrenched, with fewer activists being able to produce and disseminate the kinds of navigational knowledges required during a demonstration in order to ensure the safety and mobility of fellow activists.

Built Environment and Temporary Features

Agre's (1994) capture model contains five stages that comprise an overall 'grammatization' of an activity. Stages one and two are the 'analysis' and 'articulation' stages, involving both the identification of the logic of an activity and the codification of it. Together, they provide the phases in which a particular kind of observation and calculation takes place; through which the activity in question comes to be 'known' and 'captured' in some manner. In respect to the protest events in which the Sukey platform was deployed, this *navigational* knowledge was centred on the possibility (or actuality) of a containment being formed. But this is not the whole story. The platform did not 'switch on' purely at such moments. On all occasions the platform was 'live' from before the beginning of the official demonstration (usually anywhere between 10am and 12pm) and continued well into the evening, should it be necessary to do so (often until 9 or 10pm). Although the anticipation of containments was at the heart of the platform, and often comprised the bulk of the messages verified and tweeted from the associated social media account, it also had a more general function to provide navigational updates and assistance throughout the event.

As argued in the previous chapter, the platform attempted to integrate many more of these features in updated versions.

Agre's model, however, does not consider a plurality of activities or actors. Although he is keen to emphasize the non-linearity of the capture model in which some stages may run before others in the sequence, run parallel or proceed indefinitely or recursively; he is less keen to highlight the hybrid nature of many capture models in which activities are comprised of intertwining strands. Applying it to a protest situation requires that it be adapted for such. Thus, the analysis and articulation stages, in this case, amount to a kind of *divided attention*. These articulations feed directly into the proximal decision-making of protesters, as well as the scripting of future movements in response to the knowledge gained on police activity through these initial phases.

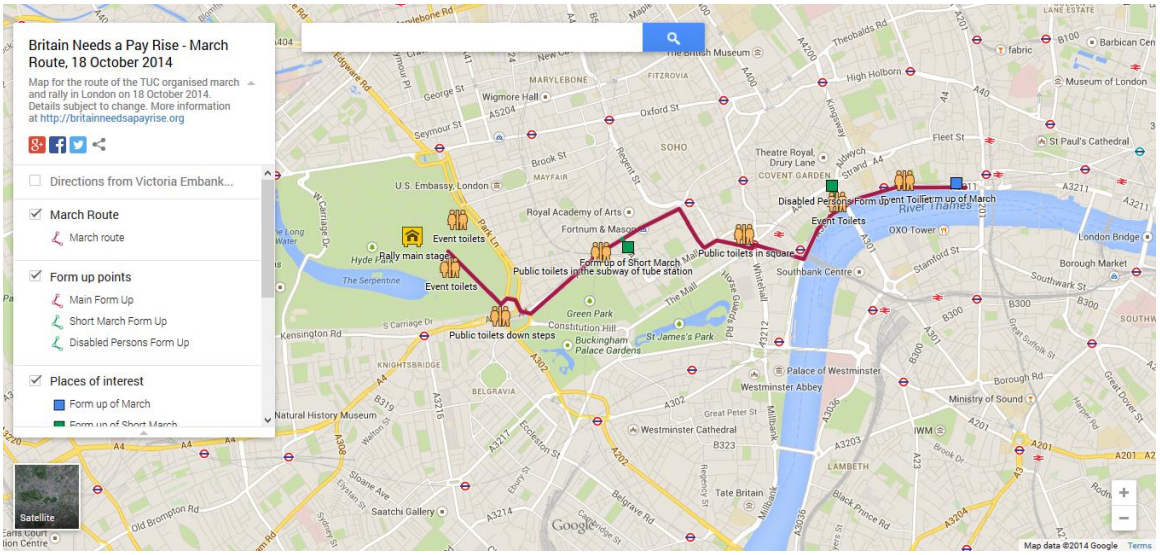
The difficulty, however, is knowing how to identify particular spatial formations. When this subject was brought up in conversation with developer X (interview, February 17th 2015) they discussed the notion of there being three possible temporal or 'anticipatory layers' to the identification process. These broadly adhere to the different elements in Rose-Redwood's (2008, 289) typology of different levels of spatial inscription; from a basic coordinate system to event-based knowledges. However, what is key to understand in this case is that each of these layers corresponds to the degree of *anticipation* required by the developers to map such features for users. Each of these layers, therefore, involved a differing degree of difficulty when it came to observing and articulating the forms included in each.

To explain, the easiest of these layers to anticipate is the built environment. Despite rampant urban redevelopment, central London's street layout remained the same during the platform's operation. Although new office blocks, residential towers and commercial premises emerged in those 3 years, few of these developments resulted in actual changes to street layout – a critical foundational element in the mapping of event phenomena. Without an up-to-date record of the street layout of central London the Sukey platform would have been of little value to those using

it. For example, in a manoeuvre discussed in more detail later on, protesters often took advantage of side-roads, alleys and arcades to 'splinter' from official demonstration routes. Many of these streets take quasi-public forms that are subject to closure or other spatio-temporal restrictions regardless of whether a demonstration is live. Ordinarily these restrictions may not have considerable impact (certainly not as much as an A-road closure, for example), but during a demonstration in which knowledge of the street layout is paramount the impact on movement is significant.

Moreover, much of this cartographic groundwork had already been done by either Google Maps or OSM. The Sukey team was not responsible for mapping the built environment. Thus, no anticipation of built environment or road layout changes were carried out by the team itself in advance, or on the day, of any demonstration. Any inherent errors with either Google Maps or OSM would, therefore, make their way into the Sukey platform. However, a shift from Google Maps to OSM meant that any of these could be rectified more quickly by lay people so long as they had an OSM account and knowledge of how to correct cartographic errors on the platform.

The next layer involves the mapping of temporary features. Official routes for protest events in the UK have to be agreed-upon with local authorities in advance. This is so road closures and transport diversions can be prepared and advertised in order to minimize disruption. It also allows stewarding and policing levels to be determined, depending on the length, duration and sensitivity of the route itself. If organizers fail to notify a local authority of a routed protest it is deemed illegal. The police then have a duty to prevent it from proceeding. As well as these administrative reasons, it also allows activists to plan ahead. All the anti-austerity and student demonstrations I have attended during the last five years have circulated this official protest route via various digital and print channels in advance of the event.

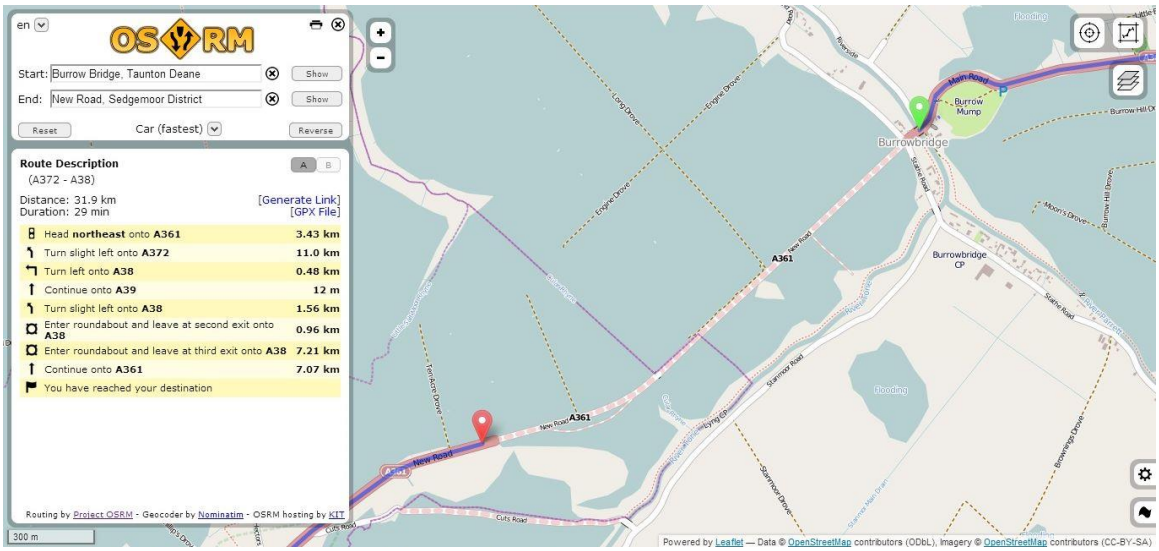


Map 8.1 | 'Britain Needs a Pay Rise' demonstration route

These official routes were commonly plotted on popular, accessible and widely-used digital mapping platforms such as Google Maps. For the 'Britain Needs a Pay Rise' demonstration in October 2014, the TUC created a simple Google Maps overlay with the main protest route visualized – not too dissimilar from the original Sukey Google Maps mash-up. Included alongside it was the location of official feeder points for those wanting to walk a shorter route, and for disabled protesters. Public and portable toilets were also mapped, as well as the location of the main rally stage in Hyde Park. Standard Google Maps icons are used for these static features and the map backdrop was the default layer with tube stations (Temple, Embankment, etc.), major road names (The Mall, Constitution Hill, etc.) and geographical areas (Mayfair, Covent Garden, etc.) all prominent at various scales.

Like the built environment and street layout before it, anticipating official demonstration routes is relatively easy from a cartographic perspective. Changes to a demonstration route are unlikely to occur once publicized, therefore mapping it becomes a simple job of overlaying data on top of a basemap. However, there are marked differences between mapping the built environment/street layout and proposed demonstration routes. Firstly, the routes themselves are temporary. Although the minimum period of notice for a public procession is 6 days, 'organizers

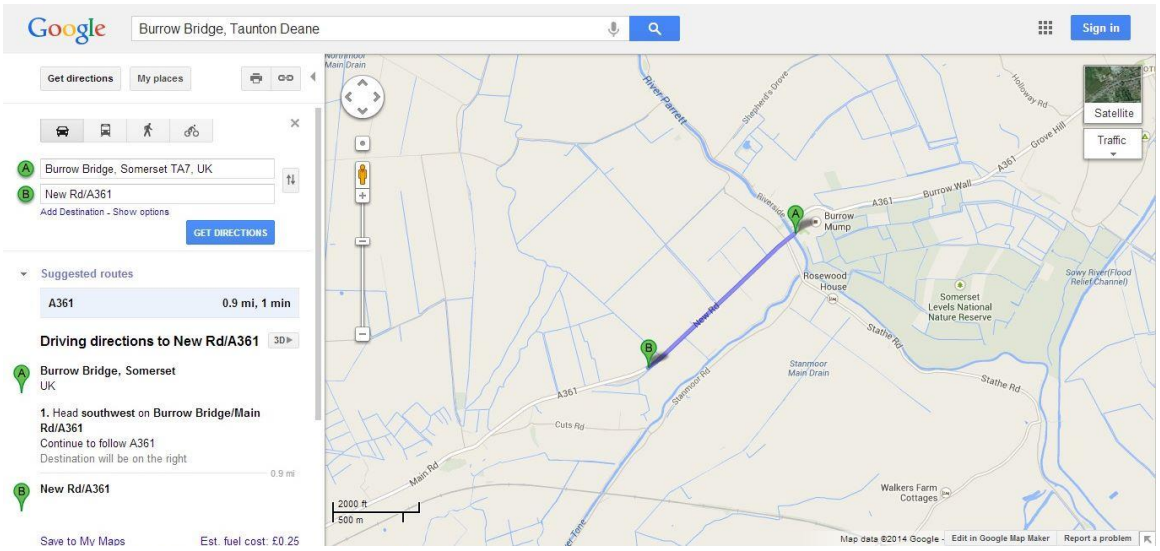
should give as much notice as possible' (London Metropolitan Police 2016, n.p.). Many prepare and publicize the route months in advance – including the organizers of anti-austerity and student demonstrations. However, the route itself is only realized for a number of consecutive hours across a single day. Before this, the route does not exist, except on police documents (Forms 3175 and 3163 if liaising with the Met), risk assessments (composed by organizers), and in other public material (maps, leaflets, websites). As a result of their temporary nature, Google Maps will not map it. Although OSM also has an official policy to only map permanent phenomena, this is not always enforced.



Map 8.2 | OSRM routing, Somerset floods 2014

When the UK was hit by heavy rainfall in early 2014, residual flood waters lingered for weeks, submerging local roads and severing the rail network. Although it is technically prohibited (OpenStreetMap 2014, n.p.), one OSM user at the time mapped the floodwaters from satellite data (Hind and Lammes 2015). The watery layer remained on OSM for over 6 weeks, despite its gradually-decreasing volume, with open-source routing software diverting users around the impassable areas. No floodwater was ever added onto Google Maps and subsequently its Directions Application Programming Interface (API) that calculates transportation routes (Google 2016, n.p.) failed to account for the blocked roads. Instead, it suggested users drive through

potentially dangerous floodwaters. What both these cases demonstrate is that standard web mapping platforms (proprietary or open-source) are not designed to accommodate temporary cartographic data whether it exists for 6 weeks or 6 hours.



Map 8.3 | Google Maps routing, Somerset floods 2014

Secondly, as a result of their temporary nature, other structures appear in the urban environment to facilitate the holding of the temporary event. Physical, interlocking metal barriers line the entirety of any protest route in order to separate protesters from non-protesters, whilst sometimes being repurposed into 'box' arrangements for extra security. On-route stages also often appear equipped with PA systems and draped with event banners in order to energize the assembled crowd. Further, temporary structures, such as CCTV gantries, are used by police to monitor particular areas or parts of the route otherwise invisible to officers; either in the form of scaffolding or suspended cherry-pickers. Side-roads and open spaces are also repurposed into makeshift parking lots for police vans, outside broadcast vehicles and medical personnel. As a result of this, new objects will need to be mapped that do not appear on default maps.

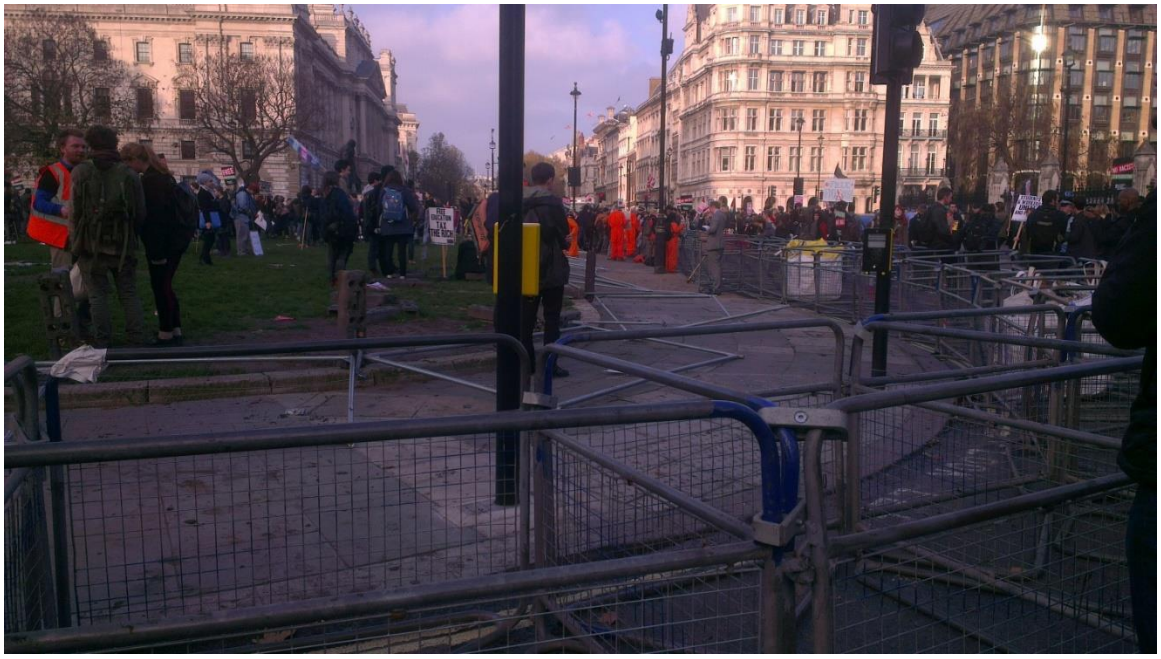
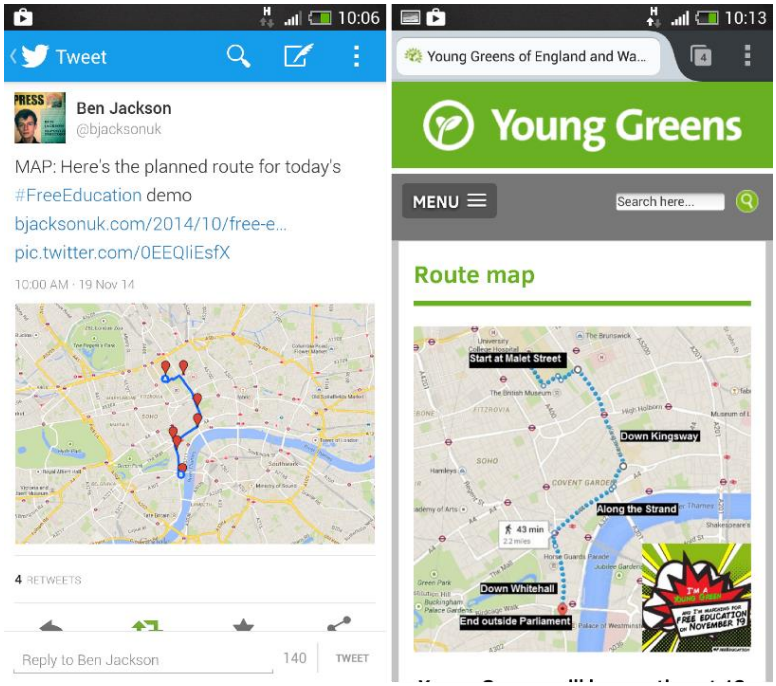


Fig 8.1| Box barriers, Parliament Square

The cartographic work that needs to be performed to account for these new structures mark this layer as distinct from the previous. On no occasion did the Sukey platform map any of this detail besides demonstration routes. Although developer X revealed that team members would, in effect, ground truth before the demonstration in order to gather relevant operational information (interview with developer X, February 17th 2015) this did not extend to mapping micro-details concerning barriers, gantries, stages or makeshift parking lots. However, some of this information made its way into social media updates to compliment the map itself. For example, as reported during the 2012 student demonstration (the launch of Sukey 3.0), Parliament Square was said to have been 'all locked down with double fences and sandbags' (Rikki 2012, n.p.). Although not verified or re-tweeted by the Sukey team, it nonetheless was tweeted with the appropriate #sukey and #demo2012 hashtags, and was therefore searchable by those following the platform on social media.



Map 8.4 | NCAFC demonstration route as mapped by a journalist (left) and the Young Greens (right)

In conclusion, the mapping of this temporary phenomena is dependent on those individuals with sufficient knowledge of how to overlay transient data (demonstration routes, floodwaters, makeshift structures) on top of the pre-existing built environment/street layout. These are the types of individuals that Gerlach (2015) identifies as 'vernacular mappers', engaging in a form of 'minor mapping' (Gerlach 2015, 7). Maps were also produced of the protest route in the lead-up to the 'Free Education' demonstration in November 2014 using simple routing capabilities on Google Maps. Once again, neither required the use of professional software or skills. Their existence, however, allowed protesters to prepare for, and navigate along, the official demonstration route. Whilst some of these efforts were down to Sukey it was not exclusively so, with journalists, other organizations and social media users also contributing.

Active Phenomena

The most difficult feature to observe, articulate and anticipate was at the level of protest action itself. Unlike the built environment or temporary features, the mapping of active phenomena

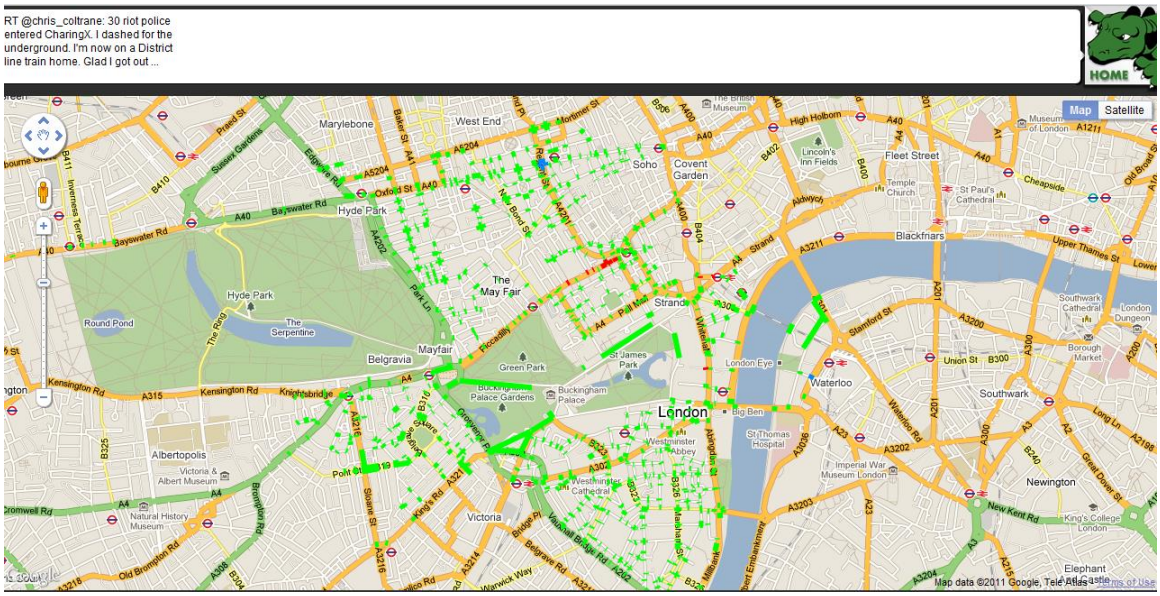
depended on being able to *predict* and *pre-empt* movements and manoeuvres made by humans. Far from a human-centric mapping, however, much of these active phenomena comprised of activists with banners and placards, mounted police officers, or members of the TSG riding in police vans. Each posed peculiar issues concerning the type and manner of movement. This became the crux and the paradox of the Sukey project. In short, it desired to map, with divided attention, manoeuvres of both protesters and police officers ideally in advance of their materialization.

This level of anticipation required responding not in months, weeks or hours but in seconds. Unlike the previous two layers, the phenomena being mapped was immeasurably more unpredictable. Changes to the built environment and street layout are known months in advance. Further, the possible addition of temporary structures and objects (fences, sandbags, cones, gantries, stages, etc.) to the urban landscape is recorded and detailed in various documents weeks in advance of a demonstration (although not necessarily made public), and is materially visible hours ahead of the event itself. The phenomena in this action layer do not give its mappers the chance to carefully ground truth in advance and update any map.

Instead, these phenomena consisted of a plethora of contingent movements; sometimes undertaken by lone individuals, but more often in a coordinated fashion. As protesters move along a specific route, one might be able to predict with some certainty where they will go next and how fast they may move. Yet when protesters perform particular kinds of manoeuvres designed to disrupt the smooth running of a demonstration, these movements may cease to be predictable and therefore mappable. The same can be said for the actions of police officers. The next chapter goes into greater detail regarding such manoeuvres.

Practically, Sukey could only map in minutes. This begged the question: how many mapping enterprises could similarly map spatial manoeuvres within such a timeframe? The lack of resources to do so made the platform even more remarkable. But much of the required

navigational information lay entirely unavailable to those protesters requiring it most. The period of time across which the main wave of major student demos occurred in London was a single month (November – December 2010). Subsequent actions were more explicitly anti-austerity and anti-capitalist events ('March for the Alternative', March 2011, etc.) including the event at which Sukey 3.0 was re-launched (October 2012). As such, they contained a far greater plurality of activists from non-student activist backgrounds. As the general campaign began in November 2010, many student activists were only becoming aware of the shape, form and extent of the containment tactic, and few had access to both general and specific, time-conscious updates during such. Only when the Sukey platform was initially launched as a Google Maps mash-up (December 9th 2010) and refined as a standalone web application (January 29th 2011) did this information become more readily available.



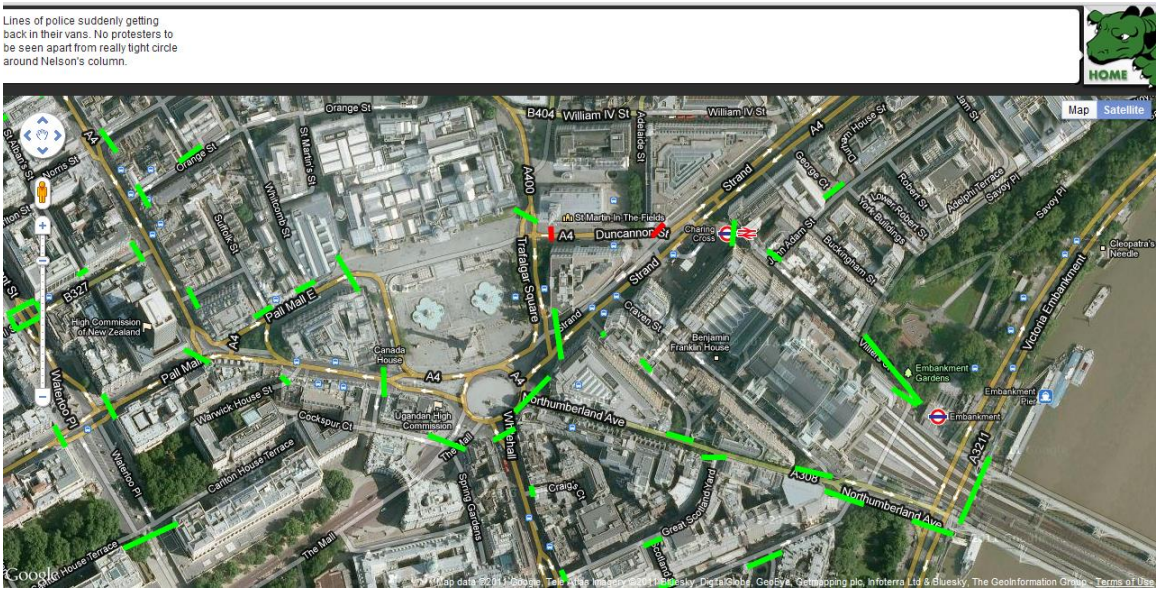
Map 8.5 | 'March for the Alternative' (2011) overview, Sukey 2.0

The ability to map in this temporal register is only something that some mapping platforms are now beginning to execute[26], despite the fact that major cartographic enterprises such as Google

[26] Most notably in relation to automated driving, where the live mapping of road hazards becomes absolutely critical for human safety. I would argue that mapping in this temporal register is only now possible at an appropriate scale (urban and upwards) thanks to automation. See reported efforts by HERE (Miller 2014), Tesla (Perkins 2015) and Uber (LaFrance 2016).

Maps and OSM either outlaw or are technologically/organizationally incapable of mapping features in existence for hours, days and weeks; far aside from phenomena that has only been in existence for minutes or second. To reiterate: Sukey was able to map emergent containments and other phenomena usually within minutes, and update social media accounts in seconds. No other crowdsourced mapping project has been able to do this during a protest event either before or after its existence. That this was performed by a small, volunteer team with no prior digital mapping experience was an especially unique feature of the project.

In interviews with second-wave protesters (activists X and Y, university campus, 2014-2015), this lack of knowledge had an obvious effect on the capacity for protesters to remain safe during a demonstration, as well as providing the space for 'disruptive' activities. Put simply, they did not fully know the 'terrain'. Protest events can be rather daunting occasions. Their intensity, coupled with the possibility of confrontation with the police, and alongside the fear of getting lost or missing transportation back to campuses, can add up to a great sense of anxiety. These are all concerns of a geo-cartographic nature involving various navigational practices: moving within a mass of bodies, coping with a large-scale event, and familiarizing oneself with the local, urban environment. They require a general attention to generative (perhaps unforeseeable) moments, as well as towards objects, locations and people. Further, they necessitate the development of manoeuvres in order to cope with these oft-unruly dynamics.

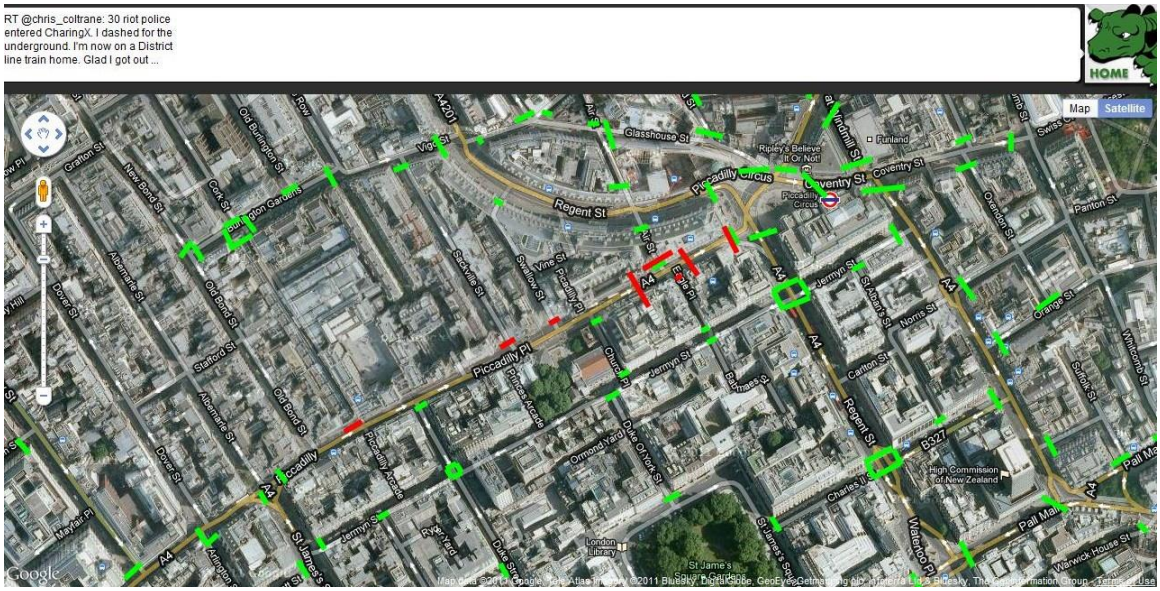


Map 8.6 | 'March for the Alternative' (2011) containment I, Sukey 2.0

During major demonstrations the platform was able to assign risk scores in relation to emergent or already-occurring containments. This formed the central function of Sukey 2.0 and enabled people to act on the accessibility of any roads or junctions within the vicinity of a protest to ensure they did not walk straight into a containment. Desktop screenshots of the platform from the 'March for the Alternative' demonstration in March 2011 show the mapping of large swathes of central London using a three-colour system: green, blue and red. *Green* indicated to activists that roads and junctions were entirely passable, with protesters free from any imminent or actual containment. *Blue* (as seen at the intersection of Oxford and Regent Street to the north of overview map) indicated that roads and junctions were passable but partially blocked. *Red* indicated that movement along the street, road or junction coloured such was entirely blocked. A collection of red lines gathered around one particular location (say, at a junction) would indicate a containment was in place.

Although rudimentary in design this simple quasi-traffic light system enabled activists to keep abreast of possible changes to road access around the protest area. It also alerted users to any active kettles. This resulted in two possible responses. In the first instance, the platform would alert protesters to the location of a containment in order to prevent them from unknowingly

wandering into danger. In this sense, Sukey operated as a *caring*, navigational tool attentive to the risk involved in attending a demonstration. Yet in the second instance, it also allowed those present at a demonstration to track the flashpoints or key incidents of the protest itself, not in order to avoid it, but in fact to pinpoint its location in order to *amplify* any possible disruptive action. Whilst appearing to make a 'concise statement about risk' (Leese 2016, 149), the quasi-traffic light system did not offer a definitive, navigational instruction; but multiple, navigational *possibilities*. Both responses follow what Lance Bennett and Alexandra Segerberg (2012) would call the 'logic of connective action'. In other words, that the platform radically transformed the nature of communication, mapping and movement during protest events by providing the navigational conditions for action.



Map 8.7 | 'March for the Alternative' (2011) containment II, Sukey 2.0

In many cases, this split function of the platform was knowingly utilized by protesters – including myself. On numerous occasions, rather than use the platform exclusively to steer clear of a mapped containment by, say, retreating to an area with a high density of green-labelled roads, I would use the platform to navigate *towards* the areas where a greater density of red-labelled roads and junctions could be found. I thus argue that this reveals a rather less obvious dynamic at play during its use: that the management of personal risk had the potential to play out in less zero

sum ways. Users would not necessarily seek to escape particular areas displayed on the map in red if the 'reality' differed. That is to say, if the terrain itself did not express the risk as mapped through the interface.

Yet, when I expressed this to developer X, they seemed a little surprised (interview with developer X, February 17th 2015), suggesting that the platform was designed with the express desire to guarantee the safety of others during demonstrations. This was also a view shared by a colleague in my department, familiar with the platform.[27] Yet personal experience of using the platform, coupled with knowledge of how occupations, splinters and rhizomatic manoeuvres are performed, would suggest that the platform did also aid those in navigating to key flashpoints during a demonstration. At no point did the platform instruct protesters to navigate towards or away from a location, but with this navigational knowledge, users were able to make a more informed decision taking into account the visualized risk levels.

In any case, as Elwood and Leszczynski (2013, 553) suggest;

> This resituating of geovisual epistemologies involves the use of interactive geovisual interfaces to frame an exploratory engagement with content, rather than primarily for the purpose of cartographic abstraction or cartographic representation. Strategies for asserting the legitimacy or credibility of the information or knowledge claims made via these interfaces are cultivated not foremost through demonstrations of conventional norms of science or disciplinary cartography, but through practices of transparency, peer verification and witnessing.

It was through the platform itself, that users were able to assess the 'legitimacy' or 'credibility' of the navigational information presented to them. It has resulted in what Elwood and Leszczynski (2013, 555) further contend is a 'resituating of digital spatial knowledge politics', in which

[27] Personal communication, June 26th, 2015.

'individualized interactive/exploratory ways of knowing' are prioritized. To sum up, the Sukey platform operated across all layers; working to provide navigational information to protesters in each. However, it would only *actively* be involved in observing and articulating details at the second level (temporary features) and close to all of the third (active phenomena).

(Unrealized) Navigational Knowledges

For a crowdsourced platform, the presence of attentive individuals was therefore vital. Firstly, in a technical-operational sense, so users were able to send messages to the team in the appropriate format (the *who, what, were, when* discussed in the previous chapter). But also, secondly, in a risk-sense to ensure the wellbeing of the protesters engaging with it. The production of navigational knowledge was thus integral to the security of both of these entities (platform and protester). For the former this was dependent on 'populating' of the platform with useful data. For the latter, it meant the ability to anticipate future manoeuvres of institutional (TSG, etc.) and extra-institutional (activists) bodies. The real necessity of the platform within the protest spaces created during the student and anti-austerity activism of this 2010-2015 period is only analyzable now the platform is no longer active. With this absence, it becomes possible to address the *lack* of navigational knowledge being 'captured' (in the Agre-ian sense) by a digital mapping platform such as Sukey.

In conversation with one activist, it was made clear that knowing what a protest event entails was far from obvious. Much of what to expect on the day comes from campus briefings prior to these distinct spectacles. It is primarily through these that activists circulate ideas and develop thoughts around what to expect on protest marches, how to respond accordingly to them, or indeed, how to avoid them. Often they are organized by SUs, but commonly also by independent activist groups. As the same activist describes:

> [Organization X][28] was set-up at the beginning of this [academic] year [2014-2015] initially with the march in mind. We knew that the demo[nstration] was coming up and one of my friends – who has links to NCAFC who is one of the organizers of it came and set-up this group. And yeah, that was my first experience proper organizing. It was fun but it was quite tiring because we were out every single day basically. We did tabling, we did flyering, posters, stickers, hall-runs. All online stuff. So we really did a lot of work. And it worked – we managed to mobilize around 100 students for [university X] to go so we negotiated with the SU and managed to get coaches and people only had to pay £5 to get to London and back which was pretty good. I think we filled about 80 coach spaces and we also met some people in London, and we were told that was, like, even bigger than the group that went in 2010 which was a lot bigger demo. So it shows that the mobilization techniques we used did actually work. (Interview with activist Y, February 24th 2015)

As they further acknowledge, this was far from work they undertook independently. In fact, much of it involved 'following in other people's footsteps' (interview with activist Y, February 24th 2015). Although fear and anxiety often define these initial experiences of protest events, they also act as radicalizing force for those involved; bringing politically like-minded people together. When asked about the reasons for this, activist Y said:

> I think it's to do with the size, it's to do with, for me it's just a kind of, like, all the cheesy clichés to be honest but…it is…very, very powerful to be part of something so big. And to be kind of stepping out of the uni[versity] bubble, particularly the [university X] bubble. You know, just like marching with people you've never met before but you kind of have this like instant connection, marching for the same thing. (Interview with activist Y, February 24th 2015)

[28] I've anonymized the organization in order to prevent identification.

But not all of the knowledge-building occurred in the months before the initial protest activist Y went on in November 2015. Indeed, some of it only happened the night before the protest and even on the organized coaches to the demonstration itself. Much of this focused squarely on the practical nature of participating in the protest. As activist Y explains:

> So basically we got on the bus, and at this point it was still a very official thing. We had quite a few sabb[atical] officers came, which was nice. It was nice to have the sabbs there but you know it was because the coaches…put on by the SU and was quite formulated [sic - formulaic] and we had, which I think is always a good idea for a demo, we had a buddy system where, like, you always stay with one person; make sure they're not alone…just purely because there's…10,000 people and you could easily get lost, and it's in London, so. I think quite a few places implement that. (Interview with activist Y, February 24th 2015)

In the absence of Sukey this buddy system became the only source of specific, event-based navigational assistance for participants. Even still, one would assume the knowledge gained through pairing up with another student would not stretch to knowing where temporary features were or active phenomena were likely to pop-up. Only that, with a buddy, students might be less vulnerable and more likely to find their bearings if lost. More details from the same student reveal the build-up to the demonstration:

> So we were on the bus down and that was actually really fun because, again, one of my friends had printed out this huge sheet of chants for the demo, so we could practice on the coach on the way down, and also we were already quite hyped up, because the day before we'd been making banners and placards and stuff and I think we also watched a really great documentary called 'Street Politics 101'…about the student movement in Canada. Which is obviously very relevant and it's such a great documentary and so everyone was really hyped up for it. (Interview with activist Y, February 24th 2015)

When it came to the actual event, some of these collective engagements continued, although there was a clear conflict between those 'following the route' and others deciding to take other kinds of direct action. As the activist continues:

> …from my perspective…the demo went exactly as it…planned to I guess. In the sense I very much did stick on the route and I went to the rally of speakers that was held at the end. But a lot of people didn't do that, and I think there's a good reason for that…I kind of just went to the rally but there was definitely a point where the march split because there were people who carried on going down towards the Houses of Parliament to the rally like I did. But then there was an offshoot of people who obviously felt, which I think perhaps quite rightly so, that if everyone stuck to doing an A-to-B march that was known and planned and accepted by the police then it's not going to be – it might not necessary be – that powerful. (Interview with activist Y, February 24th 2015)

The divergence of desire here is interesting. At no point during Sukey's operation did it 'command' protesters to do anything at all, force them to take any particular route, or engage in any kind of action they felt uncomfortable with. Although it has been argued throughout that the platform helped to generate the kinds of 'disruptive' actions mentioned by activist Y above, especially 'splintered' activities beyond an A-to-B march, it was never exclusively designed for this purpose. Many of the concerns highlighted by activist Y regarding safety and navigation are echoed by others at the same demonstration in 2014. This was, of course, within Sukey's remit. Few students had express experience of dealing with risky moments at the demonstration itself. In other words, whilst they were able to anticipate certain features or aspects of protest event (route, atmosphere, comradery, etc.) particular navigational dynamics affecting activist safety were elusive.

Activist X, from the same university as activist Y, was part of the 'offshoot' of protesters who eschewed the final rally by the Houses of Parliament laid on by the event organizers. They took a

slightly different view of the event, suggesting that the same involvement by their institutions' SU somewhat curtailed the freedom of those attending the demonstration:

> …most [university X] people were all together but obviously, didn't have to stay with us. And I guess there was like a couple of sabbatical officers…there cause the SU was kind of running the logistics. They had their own set of rules where they were like 'this is what we expect', you know, 'if you leave the [university X] bloc' as it were then you're not representing [university X] any more. 'If you do anything illegal' you're not representing [university X]. (Interview with activist X, December 2nd 2014)

Due to the manner in which many university SUs operate, and the way in which activists often have to utilize existing mechanisms and procedures to ensure a high turnout for such events (despite perhaps disagreeing with more 'formalized' student politics), the above sentiments are common. As SUs commonly subsidize travel to such events – and as a condition – send sabbatical officers on the coaches with them as official representation, those planning on attending have to be made aware of the legalities for both those protesting and the institution they count themselves part of. In effect, this acts like a kind of parliamentary whip; students are not forced to stay in particular institutional 'blocs' and protest in a particular way, but are nonetheless given practical advice, navigational information and, indeed, legal guidance that might sway their decision-making. In turn, this affects the extent to which students desire to engage in activities beyond A-to-B marches. Naturally, this comes into conflict with the more radical organizational forms activist X and Y were part of prior to the protest event in 2014.

Moreover, what Sukey allowed protesters to do was to challenge some of these pre-formed expectations and provide a platform for the negotiation of new encounters that heretofore had been absent. It provided a framework not to supplement but to replace this existing buddy/bloc mechanism. For activists X and Y, the Sukey platform would have enabled them, like the first-wave activists before them, to receive up-to-date navigational knowledge operating in the most critical

anticipatory layer. Although university SUs could provide students with practical advice on what a protest event generally and usually consists of, they could say little on the *particularities* of each demonstration as these moments arose. Whilst one could be minded to always stay with a fellow student to avoid getting lost, such advice would fail to provide activists with moment-specific information that could assist in the calculation of the emergent risk to them or fellow participants. Less still, to participate in the crowdsourced capture of this information.

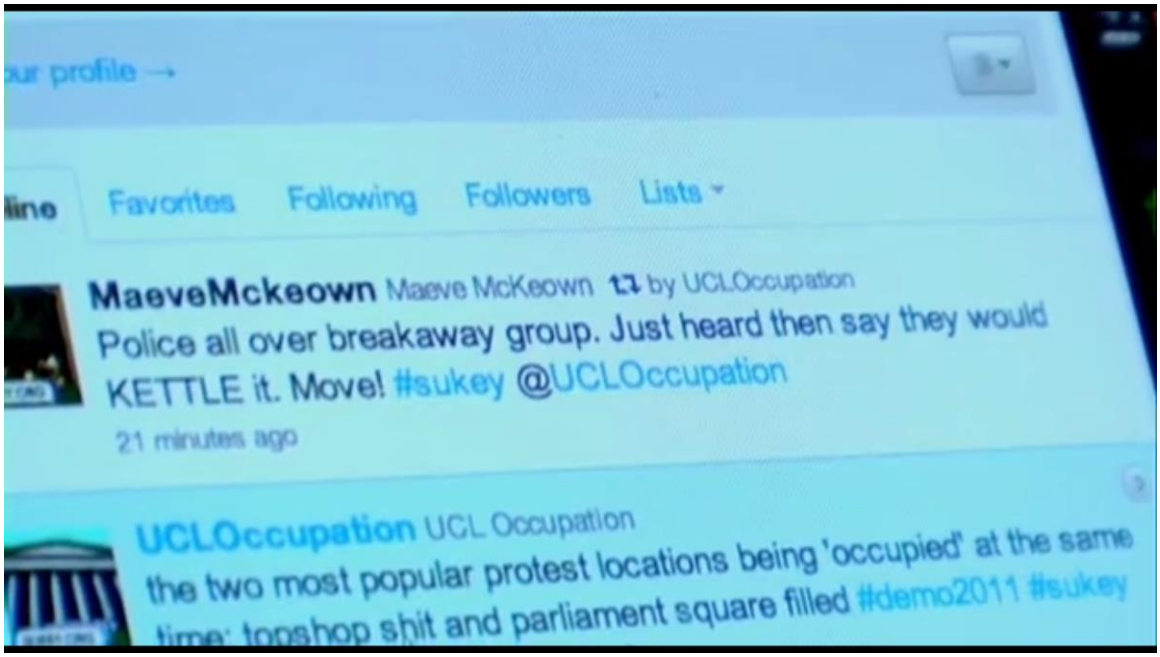


Fig 8.2 | The Topshop containment. Source: *The Real Social Network* (2012)

As footage from *The Real Social Network* (2012) shows, the platform provided the basis for a new kind of 'live', 'many-to-many' communication. The sentiments expressed by many of the individuals featured in the film are indicative of the excitement and relief at the navigational assistance the platform could offer. In one clip a protester participating in the UK Uncut occupations during the 'March for the Alternative' (2011) jubilantly exclaims that:

> Sukey told us we were about to be kettled at Topshop, so we moved from Topshop. I twittered [sic] in saying that we moved off Topshop and the techies [the Sukey team] texted back saying "Yes, we know, it's working!" (Fales et al. 2012, n.p.)

This neatly encapsulates the optimism users had whilst Sukey was active. It became a conduit for real-time, crowdsourced updates that were responsive to, and in theory in anticipation of, developing situations that otherwise would have left protesters endangered. Moments such as these captured on camera served as 'concrete' evidence of Sukey's applicability in the midst of otherwise unpredictable protests. [29]

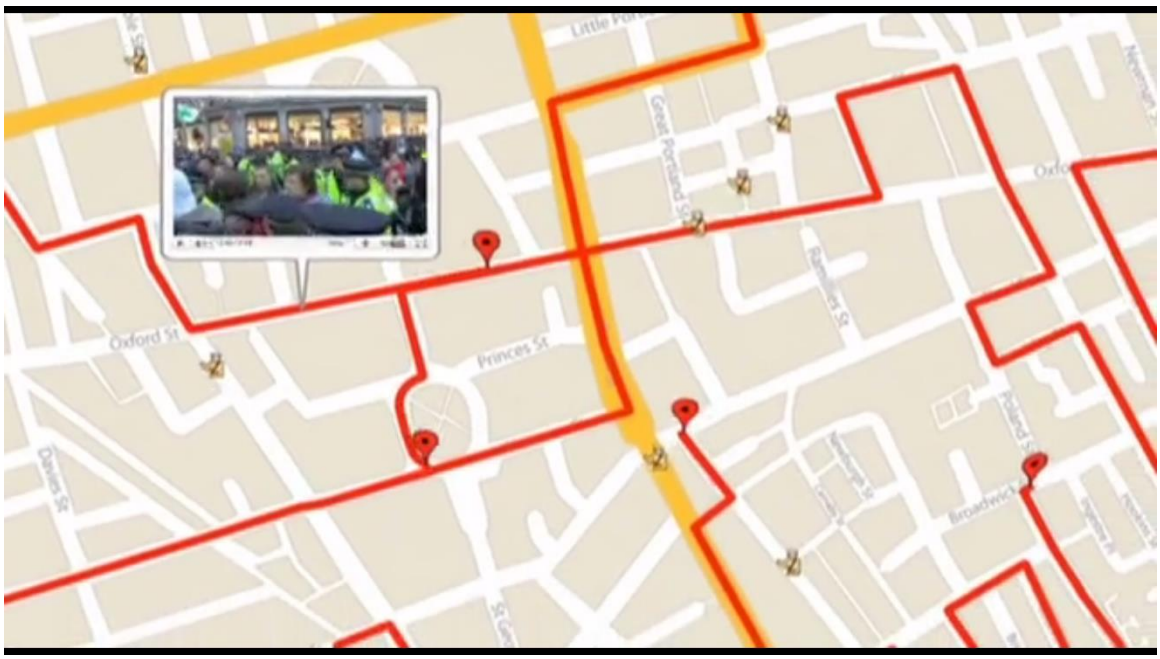


Fig 8.3 | The aftermath of the attempted Topshop containment; cat-and-mouse games. Source: *The Real Social Network* (2012)

Further, as suggested in chapter 4, the platform was not designed for 'A-to-B'-style navigation. It was not, therefore, a vehicular sat-nav to ensure a destination is reached. Put otherwise, it was not a route planner. At no point would users be able to navigate from a point A to a point B using the information as verified, provided and mapped. Instead, when the update concerned the formation of a containment, users were only ever informed of a specific location, or locations, to avoid. As the Twitter screenshot shows, navigational commands were often simple: "Move!". Even then, however, for those not familiar with places on the map and locations, street names or points

[29] Thanks to the individual who gave me full access to the film.

of interest mentioned in social media updates, these simple commands became just as tricky to respond to.

Conclusion

This chapter has sought to explore the navigational knowledges produced by three cartographic layers during protest events, each loosely corresponding to Rose-Redwood's (2008) established categories of spatial inscription.

The first of these layers concerned the built environment; including the mapping of individual buildings and the street layout. Historically, this has been a task for national mapping agencies, but in recent years has been carried out more expansively in the public realm by Google Maps and OSM using very different techniques. Sukey did not attempt to map these features during protests but became reliant upon their efforts regardless, with users requiring a 'basemap' for navigational purposes. The second of these layers, as I detail, included 'temporary features' such as metal barriers, fences, gantries and other objects usually deployed during protest events to control and monitor the movement of protesters. This level is not usually performed by mapping companies but by event organizers, journalists and other interested parties in the run-up to demonstrations. In rare cases this phenomena has found its way onto the likes of OSM despite express instructions (OpenStreetMap 2014, n.p.). But without the overlaying of such data during protest events, activists found, and continue to find, themselves dependent upon an 'everyday' platform using data collected and mapped over the course of weeks and months, without the specificity required for a single, spectacular event.

What marked the Sukey platform as radically different, then, is that it mapped what I call 'active phenomena'. The data captured in this layer was done so in minutes and seconds rather than days, weeks or months. As such, it requires a great number of resources and labour to be performed. These active phenomena are mainly comprised of manoeuvres carried out by activists and other

actors, such as the police, during the extent of a protest event. Far from an exclusively human category (as opposed to 'inanimate' buildings and physical objects), such active phenomena routinely included the activities of activists and police officers in concert with other beings, technologies and things such as horses, flares, signs, and vehicles.

This detailing of each particular layer, however, has built on Rose-Redwood's work to suggest that what distinguishes each from the other is not the geographic information collected, *per se*, but the *temporality* and *state* of its production. In other words, that each layer demands a different level of 'anticipation' in order to be generated, with both developers and users operating in particular temporal registers demanded by the protest event they found themselves in. Thus, I call these 'anticipatory layers' in order to distinguish between the degree of anticipation possible to map the geographic data. These constituted a 'resituating of digital spatial knowledge politics' (Elwood and Leszczynski 2013, 555).

In the platform's absence the navigational knowledges produced during protest events have been lost. Institutional mechanisms, such as buddy systems, designed to ensure the safety of protesters during demonstrations have not been able to replace the functionality offered by the Sukey platform. This lack of navigational knowledge production has led to a diminishment in disruptive capacity during protest events as activists are left without critical information regarding possible risks to safety and mobility, such as containments. In other words, that the 'experiential knowledge' (Elwood and Leszczynski 2013, 555) produced during protest events was no longer being utilized, in order to advance navigational aims.

Yet, as the next chapter will explore, an array of different collective movements have been devised, developed and deployed during protest events that continue to be performed regardless of the presence or circulation of particular kinds of navigational knowledges concerning the risk values of various features, structures, objects and phenomena in the urban environment. Nevertheless, that is not to say that the consequences of this lack of navigational knowledge

generation and circulation are not severe. In fact, it is much the opposite. With the lack of such, the deployment of various manoeuvres designed to disrupt the smooth operation of containments becomes increasingly precarious, both for those organizing, and participating. The result is an increased risk of containment. With no anticipation of such, there is no ability to prepare, avoid or disrupt. This next chapter looks to how these manoeuvres developed.

Chapter 9 | On the Road

In this chapter I explore the various manoeuvres undertaken by activists and police during protests events. It builds on the previous chapter by providing evidence for how navigational knowledges were put into action, during a TUC and a NCAFC demonstration in October and November 2014. Further, it draws a direct connection between the aesthetic and interactive nature of the digital mapping interface, and the production and circulation of such knowledges. In short, I argue that the Sukey platform aided in the management of risk through the performance of such manoeuvres during its many deployments. In the absence of such, these risks were either left to proliferate or were taken up by different institutional mechanisms.

All emphasize the tricky process – technologically, tactically and in safety terms – of capturing geographic data for navigational purposes. The first manoeuvre, the occupation, entails a public taking of space in order for alternative social demands to be made. It is rather easily mapped during a protest event, as in the build-up to an occupation the manoeuvre often maintains a relative speed and a known direction, before participants converge on a final location. Invariably they are also nullified by particular counter-manoeuvres that attempt to (a) prevent its choreography and (b) break-up its continuation. The splinter, on the other hand, relies on the A-to-B demonstration to be performed by harnessing its energy to form breakaway actions 'splintering' from a main protest route. Anticipating these manoeuvres is difficult as they only work with the element of surprise; their disruptive qualities being derived from catching both police and organizers unaware.

The rhizome, I argue, is the most devilish and unruly manoeuvre witnessed during a protest situation. Often performed during or after an A-to-B demonstration, it has a spatio-temporal unpredictability that derives from the tactical autonomy of its participants. For this reason, I contend that the manoeuvre remains largely 'un-mappable'. The final manoeuvre is the

containment. As discussed in chapter 2 it comes in multiple guises – as *polizeikessels*, *wanderkessels*, bridge kettles, and hyper-kettles – and despite their easily-recognizable form once deployed, their coming-into-being presents a notable challenge to both (a) cartographic practitioners and (b) protesters. These final two manoeuvres are often in tension, typifying the 'cat-and-mouse' games that have become emblematic of protest events in the UK.

Each of the moments witnessed during the events were captured by a range of digital, mobile devices brought with me on each occasion, as detailed in chapter 6. Accompanying each moment is a map of a GPS tracing of my movements, as well as a sequence of images derived from original video footage shot during the demonstrations. One manoeuvre (occupation) is evidenced with two moments, each with six frames of action. Another manoeuvre (splinter) is evidenced with a single moment comprising of four frames. A further manoeuvre (rhizome) is evidenced with two moments, each containing four frames. The final manoeuvre (containment) is evidenced with a single moment comprising six frames in total.

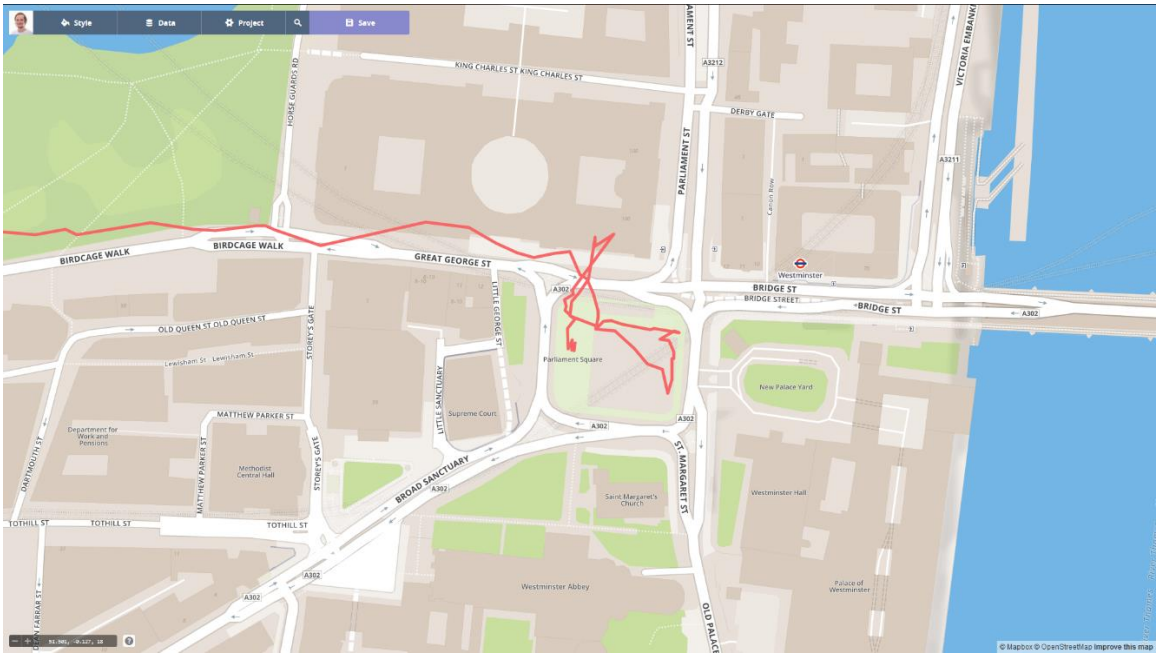
The point of establishing the metaphorical coordinates of these manoeuvres is to explore the fault lines in the Sukey platform. It does so by exploring some of the manoeuvres witnessed during the time of its operation that have continued to be deployed during events after its demise. The reason for doing so is to evaluate the efficacy of the platform in generating navigational knowledges and stimulating disruptive activities. Were there, as I contend 'short-circuits' between the former and the latter after the end of Sukey? In other words, in the absence of Sukey, were the manoeuvres discussed above carried out more or less effectively by participants? Or was the involvement and impact of the platform over-emphasized as I suggest at the end of the previous chapter? These questions will be explored in the following chapter with the fundamental failings of the platform expanded upon in the conclusion.

Occupation: 'Whose Square? Our Square?'

As discussed in chapter 2, an occupation consists of a taking of space. More appropriately, it concerns a *re-taking* of space in order to re-configure the power assumed with the control of it. Therefore, each occupation is necessarily a *re-occupation* in order to assert spatial control. What is important to explore is how an occupation comes into being. It does not simply 'appear' within its chosen space, but physically 'takes' it. Two moments from separate demonstrations exemplify this process of occupying space.

The first of these was an occupation of Parliament Square during the TUC demonstration by a non-affiliated group calling themselves 'Occupy Democracy' (OD), committed to campaigning for 'a genuine democracy free from corporate influence' (Occupy Democracy 2015, n.p.). The OD occupation began not with the taking of space but with the following of the pre-determined march route. It was only later in the day that the protest took a different turn, leaving the rally location in Hyde Park to head off in another direction for an unscheduled protest. After lowering the banners to ensure they would fit through a set of neoclassical gates, the protesters then proceeded to walk down Constitution Hill.

Fig 9.1 | Occupy Democracy, Hyde Park



Map 9.1 | TUC occupation

Throughout the duration of this parade from Hyde Park to an as-yet unknown destination the TSG followed. On several occasions officers attempted to minimize the disruption the manoeuvre had thus far caused. In the first instance they had prevented activists from walking in the opposite lane of traffic whilst then attempting to re-direct them off the road entirely. Wise to these efforts, the group decided to take a diversion by unlinking a line of metal barriers, to circumvent an improvised police roadblock ahead.

Then, as the activists approached Parliament Square they stepped over a thin, roped cordon, ignoring several 'do not walk on the grass' signs, and began to occupy the space. Once there they began to unfurl a long, green banner with 'REAL DEMOCRACY NOW!' emblazoned across it. It was at this point that various other materials, items and structures began to be erected; including a 'safe space' sign, designed to discourage discriminatory behaviour. In this example, a safe space policy was enacted to ensure that the occupation of Parliament Square remained inclusive to all; emphasizing the need to combat non-violent and non-discriminatory behaviour, whilst promoting sobriety and shared responsibility between those involved in the occupation. The concept has its

roots in the mapping of 'safe' gay and lesbian spaces (both public and private) in US cities such as Los Angeles, San Francisco and New York (Kenney 2001, Hanhardt 2013).

Fig 9.2 | Occupy Democracy, Parliament Square

Whilst a number of speakers began talking on the issue of democracy,[30] the TSG had begun to make their move, encircling those within Parliament Square. Although they did not immediately kettle protesters, over the course of the next few days the Met took steps to move the remaining activists who had begun to camp out on the grass overnight (Johnston 2014). The collection of sleeping bags, tarpaulin, rucksacks and roll-mats visible were prohibited for use during the occupation, as they were deemed illegal under the *Police Reform and Social Responsibility Act* (2011); prohibiting the use of items, objects and structures required to facilitate overnight sleeping in Parliament Square.[31]

[30] Including the leader of the Green Party, Natalie Bennett, and comedian Russell Brand.

[31] Under the *Police Reform and Social Responsibility Act* (2011, 101) 'using any tent or other such structure in the controlled area of Parliament Square for the purpose of sleeping or staying in that area' is prohibited. As is 'placing or keeping in place…any sleeping equipment with a view to its use…for the purpose of sleeping overnight in that area'. Further, that 'using any sleeping equipment…for the purpose of sleeping overnight in that area' is also made illegal. Sleeping equipment, for the purposes of the act, 'means any sleeping bag, mattress or similar item designed, or adapted, (solely or mainly) for the purpose of facilitating sleeping in a place' (Police Reform and Social Responsibility Act 2011, 102).

Fig 9.3 Police officers preparing to enclose protesters, Parliament Square

Fig 9.4 | TUC occupation

The taking of space in such a way is easily oriented towards a digital mapping platform equipped with the ability to track, capture and disseminate navigational information regarding an occupation. Returning to Agre's (1994) and November et al.'s (2010) models (of capture and navigation), the process of acquiring knowledge requires the observation and stabilization of the phenomena before it can be captured. Only then does it enter a state that enables it to be rendered on the cartographic plane. Due to the occupying manoeuvres' slow speed; in part resultant from the unwieldy nature of the bamboo and silk banners, it would have been entirely capture-able. Sukey has had no problem in amplifying these such objects whilst operational. For example:

> During one demonstration in 2011, protesters were able to keep up-to-date with the movements of a Trojan horse effigy, and a hashtag – "FSU" – standing for "Fake Stallions Unite" was deployed by the Sukey team to enable protesters to track its location. The MPS [Metropolitan Police Service] were concerned enough at its possible impact that they sent a tweet urging protesters to continue on past it; its playful intervention providing a logistical headache, with its ceremonial burning becoming a focal point for joyful, and largely unpredicted, scenes towards the end of the official march. (Hind 2015a, n.p.)

Protesters at this similar demonstration, then, were able to track the progress of a cumbersome Trojan horse effigy as it was 'fed' into a main body of protesters, carrying it along, through and beyond the official route just as the OD banners were. In this case, every move of the effigy was monitored by the Sukey team. Whilst it certainly aided in 'stabilizing' its form, it did so not to 'freeze' it, but to radicalize its disruptive capacity.

In the absence of the Sukey platform, activists produced different ways to deal with the risk associated with protest events. The safe space concept was mobilized, in this instance, to inscribe the taking of public space with a new set of less risky ethics, in order to mark the 'boundaries of safety and danger' (Kenney 2001, 11) and provide a 'physical manifestation' of otherwise abstract

concerns (Kenney 2001, 6). Notably, the concept operated to produce an encampment (a) free from drugs and alcohol, violence and discrimination, and also (b) with a shared sense of wellbeing and responsibility.

Fig 9.5 | Safe space

Yet the semi-permanent taking of space also lends itself to a problem. Whilst it becomes easier to capture cartographically, it also, as a result, becomes easier to contain protesters, subject them to legal restrictions and to minimize disruption to a wider area. As such any disruptive capacity became nullified. This is only exacerbated in the case above by the *Police Reform and Social Responsibility Act* (2011), which prohibits the kinds of items, objects and structures that would allow the occupation to take on a quality other such manoeuvres are unable to provide: comfort and longevity. Without these necessary objects (sleeping bags, tents, etc.), any occupation fails to take hold.

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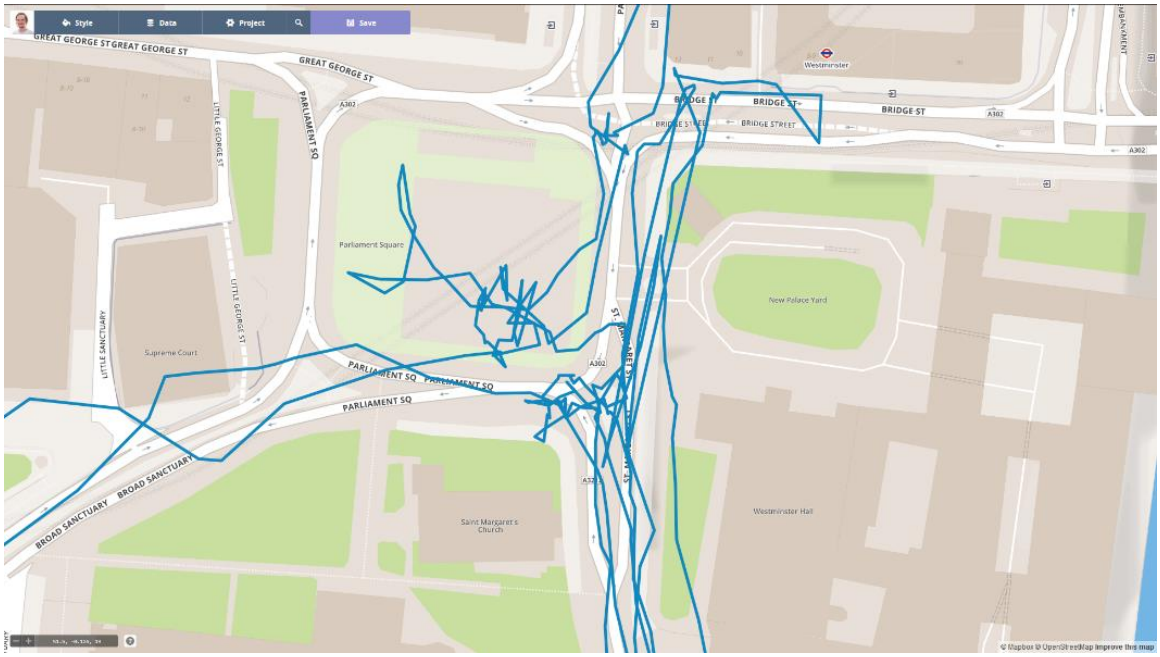
The second occupation occurred during the NCAFC demonstration. Once again it saw Parliament Square taken. However, there were marked differences between both occupations. In the first

instance the occupation took place on an official A-to-B demonstration route, rather than off it like the previous example. As such it benefitted from the volume of potential occupiers who had necessarily walked down Whitehall to Parliament Square. In doing so, it provided a rather different spatial opportunity for those involved.

Further, it took place despite the presence of two sets of fences around the square itself. Both of these temporary features had been erected in anticipation of the student demonstration and in response to the OD encampment a few weeks previous. In an attempt to prevent another occupation (legal or otherwise), the authorities took to fencing the square off completely. The first of these was a low, 'box barrier' arrangement (as depicted in the previous chapter) involving the conjoining of individual fences into a series of square pens. The second barrier consisted of 10ft high event-fencing that further prevented access into Parliament Square. The space in between the two initially allowed officers to coordinate their manoeuvres, repelling those intent on gaining access to the square. However, faced with repeated, committed attempts at a number of points around the periphery, student activists were successful in occupying the square. All of the 10ft high event fences were then eventually toppled.

Added to this, the occupation was not designed with longevity in mind. No items, objects or structures necessary for sleeping were visible in the area when the occupation began or throughout the evening when it remained 'taken'. As such, the nature of the occupation was a more spectacular one designed merely to demonstrate the ability of the student activists to take a space. In media reports at the time, it was described as a 'success' for the students (Novara Media 2014, n.p.). Yet once in it, few steps were taken to ensure it continued beyond the end of the day. Whilst flares were activated, chants sung and a general assembly held, no further activities were scheduled by any of the activists to ensure that control over the space continued.



Map 9.2 | NCAFC occupation

Finally, as a result of this absence of occupational strategy, in contrast to the OD effort, no safe space policy was enacted during the occupation to enable the minimization of risk to those taking part. In the absence of such, students returned to the institutional knowledge disseminated by their respective unions in regard to the risks possible during the protest event, and activated during the occupation of Parliament Square. Much of the information regarding such was dominated by a decision by the NUS to withdraw its support for the NCAFC demonstration in its entirety, citing 'significant concerns regarding an unacceptable level of risk' that the NUS would have left its student members exposed to if it had supported the event (Pearce 2014, n.p.). The occupation of the square was thus a moment through which this 'unacceptable level of risk' was realized.

It is within this moment that it is possible to witness the imbrication of care with spatial practice, manoeuvring and the generation of navigational knowledges. In the build-up to the demonstration, a series of anonymized emails were publically released by the NCAFC that drew attention to this same dynamic. Their contents comprised of ongoing discussions with the NUS in regards to a perceived inadequacy of a risk assessment and the lack of public liability insurance

for the event (see Appendix).[32] As a result of this concern, the NUS pulled its support entirely (see; Morgan 2014, Pearce 2014, Young-Powell 2014).

Fig 9.6 | NCAFC occupation

As the NUS President, Toni Pearce, wrote: '[t]he plans that are in place do not give us confidence that the demonstration will be *accessible* to all students – in particular disabled students' and, further, that '[w]e have commissioned and paid for, the best *risk assessment* possible based on incomplete information that we were given by organizers, and it is clear that there are inadequate measures in place to *mitigate against significant risks* in line with our advice posing an *unacceptable level of risk* (Pearce 2014, n.p., emphasis added).[33]

[32] As a NCAFC blog suggested, it was at 'a meeting of the NUS's national executive in September' that 'an overwhelming majority voted to back the national demonstration' (NCAFC 2014, n.p.) and hence fully support NCAFC in their organization of it. Nevertheless, as the email trail (in the Appendix) supposes, this support was far from unconditional.

[33] Further, that: '[w]e do not believe there is sufficient time between now and the demonstration for these risks to be mitigated', '[t]here is no public liability insurance in place' and '[i]t is clear that the

The assessment that the NUS undertook found a series of concerns that could not be addressed, or mitigated, by the NCAFC organizers in time. Yet, the student activists I interviewed expressed a belief that the NUS was a 'soft-left' bureaucratic organization, with little time for radical political action such as protest events. As one supposed, this difference in stance between NCAFC and NUS was indicative of a difference in political orientation. When asked how the former sit in regards to both regional and national student politics, their answer centered on its extra-institutional status:

> [University X Free Education Group] *freely associates* with NCAFC so most identify with their reaction to the…government's stuff that they're doing to Higher Education and how neoliberal and marketized it is, and their approach to dealing with it is very different to NUS. They're much less institutionalized, formal, I would say. But also more *lateral* as an organization. (interview with student activist X, December 2nd 2014, emphasis added)

As a reason for withdrawing support for the demonstration, the risk assessment was seen as a manifestation of, rather than a mask for, its political agenda. It was through such techniques that its 'managerialist' approach to politics was most acutely expressed. Without bureaucratic calculations – such as risk assessments and the provision of liability insurance – the NUS will not allow protest activities to take place. NCAFC, however, were prepared to take particular kinds of risks they saw as critical to their disruptive activities.

In light of the withdrawal, many SUs around the UK, including those from the Universities of York, East Anglia, Birmingham and Essex also pulled their official support, resulting in the cancellation of subsidized transportation for students wishing to travel to the demonstration (Louise 2014). Any students who attended from these universities were therefore forced to do so in an independent capacity. As student activist X also recalls, similar discussions were ongoing at their university at the time:

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concerns of the NUS liberation officers about accessibility, *safe space* and the ability for liberation groups to be involved have not been met' (Pearce 2014, n.p., emphasis added).

> You know, they were like "ah, you guys don't have the right risk assessments in place." I was like "NUS you have so much experience of organizing this kind of thing can you please help?" instead of just criticizing…it meant it was easier for them to, or critics to expect them to pull out. There was a question at the…ASM [student meeting], someone was like "how can we be sure that there's no risk associated with this?" [And] someone said… "there's always risk associated with this, this is…we're challenging, you know, the Government and their policy entirely. There's going to be a police presence. There is risk associated with it if you attend. And you can't rule that out. So it's your decision whether or not to go." (interview with student activist X, December 2nd 2014)

The difference between 2010 and 2014 was considerable. In 2010, Sukey managed the relationship between risk, navigation and personal safety, enabling activists to keep abreast of critical moments and 'active phenomena' during protests. In 2014, in Sukey's absence, and with the NUS' withdrawal, students were either (a) forced to rely on buddy/bloc tactics favoured by their own institutions, or (b) shoulder the risk entirely themselves without access to navigational updates.

Further, that the Sukey platform derived its power from choreographing disruptive activities (coupled with the provision of personal safety), whilst the NUS nullified it through bureaucratic means (a risk assessment). In the former, the management of risk concerned a protection and facilitation of bodies and collective action, through the facilitation of spatial manoeuvres. In the other, the management of risk related indirectly (through organizational commitments) to a protection and ongoing facilitation of *institutional* bodies and resources (the NUS, SUs) at the expense of individual and collective activist bodies within the protest.

Splinter: The Element of Surprise

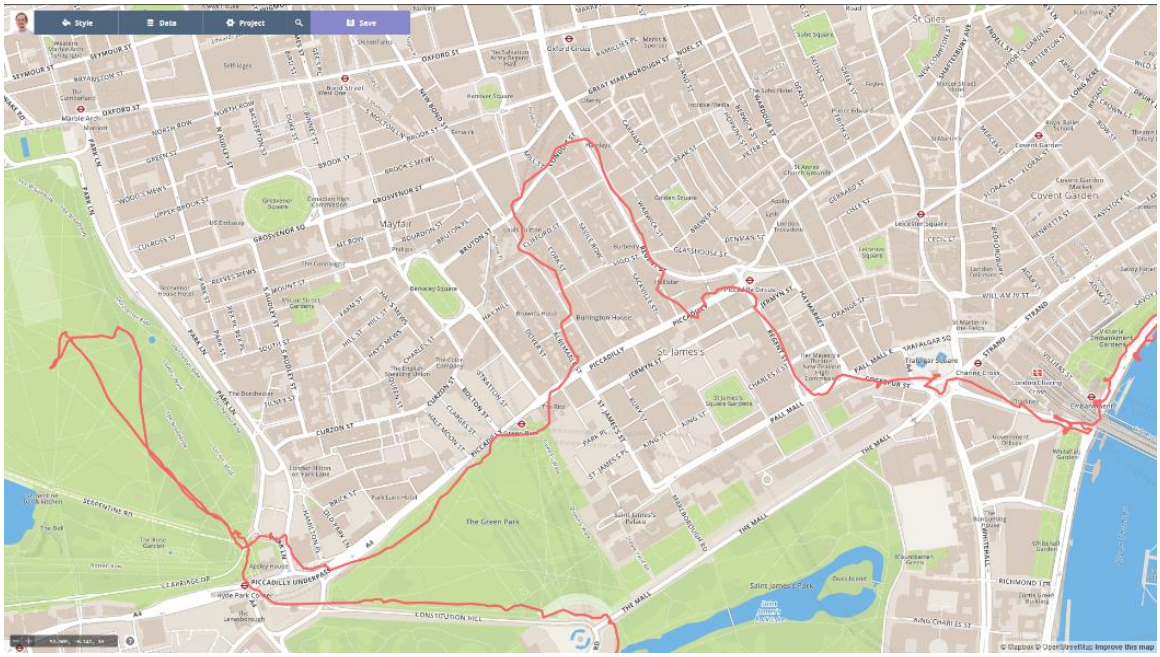
As argued in chapter 2, the splinter involves the breaking away from the main body of a demonstration. As a result, the splinter is always smaller than this main body. This splinter movement, upon breakaway, and consistent with its naming, penetrates into other entities. In other words, it acts as a 'foreign body' inserting itself into the wider urban fabric in order to cause disruption. It is thus a direct challenge to the minimization of disruption during routed protest events. Like was suggested in the same chapter, due to its 'umbilical relation' to the main body of a demonstration, its protagonists are often able to hide in plain sight as consensual (rather than overtly disruptive) activists.

The moment in question was abrupt. A small group of 'black bloc' activists[34] splintered from the main body of the TUC demonstration and ran down Swallow Street in central London. Although small (~30 participants), the splinter was significant. This was the first time during the demonstration that any protesters had sought to divert from the A-to-B route. That it happened at the same location as a similar splinter at an anti-austerity demonstration in 2012, was, I believe, more than just a coincidence. The street that protesters took off down is a small, pedestrianized connection between Piccadilly and Regent Street – both of which are main city thoroughfares. Swallow Street, on the other hand, is not.

The splinter provided some striking juxtapositions. Note in the sequence of images the presence of an array of different types of people. In frame one we see: protesters (in the top left corner), standard police officers, video-camera wielding police officers (EGTs) and shoppers (note the blue and pink retail bag). In frame two: public order officers (TSG) and a reporter (green t-shirt, grey bag). In frame three: more TSG and, most likely, a tourist (taking the photo). In frame four, with members of the TSG in the distance, two businessmen in suits, and a number of other

[34] 'Black bloc' is a tactic in which participants wear all black clothing to avoid individual recognition whilst leveraging the power of collective identity.

unidentifiable individuals. Needless to say, it is the presence of these varying peoples in close proximity to each other – unseparated by physical barriers – that generates a degree of disruption, and a 'peculiar transformation' (Sützel 2015, 221) of public space not possible within the confines of an A-to-B protest. The splinter, therefore, becomes the radical – in a spatial rather than strictly political sense – protest manoeuvre rather than the main body itself. Yet it is for this reason that the splinter presented a problem for the Sukey platform whilst it was live.



Map 9.3 | TUC Splinter

In order to perform this intervention, it is necessary for participants to act quickly. As the route of each demonstration must be agreed and fixed upon in advance by organizers in liaison with local officials, any on-the-day deviation from this route is potentially illegal. If protest organizers fail to initiate contact, the police are legally able to prevent it from happening, as London taxi drivers protesting against Uber found out in June 2014. The justification for this procedure is that it minimizes disruption for other citizens, and allows the police and other local authorities to plan ahead by re-directing public transport, closing specific roads and notifying others of such changes. In the case of the anti-Uber protest, the Met indicated that their reason for imposing conditions on the demonstration was that they believed there was a reasonable belief that the assembly

would result in 'serious disruption to the life of the community' (Garside 2014, n.p.). As such, they were able to impose a specific location (Whitehall to Parliament Street), maximum duration (2-3pm) and a decision on how 'congested' the area in which the protest was to be held, actually might become. A splinter, therefore, needs to be enacted at pace in order to catch police officers unaware.

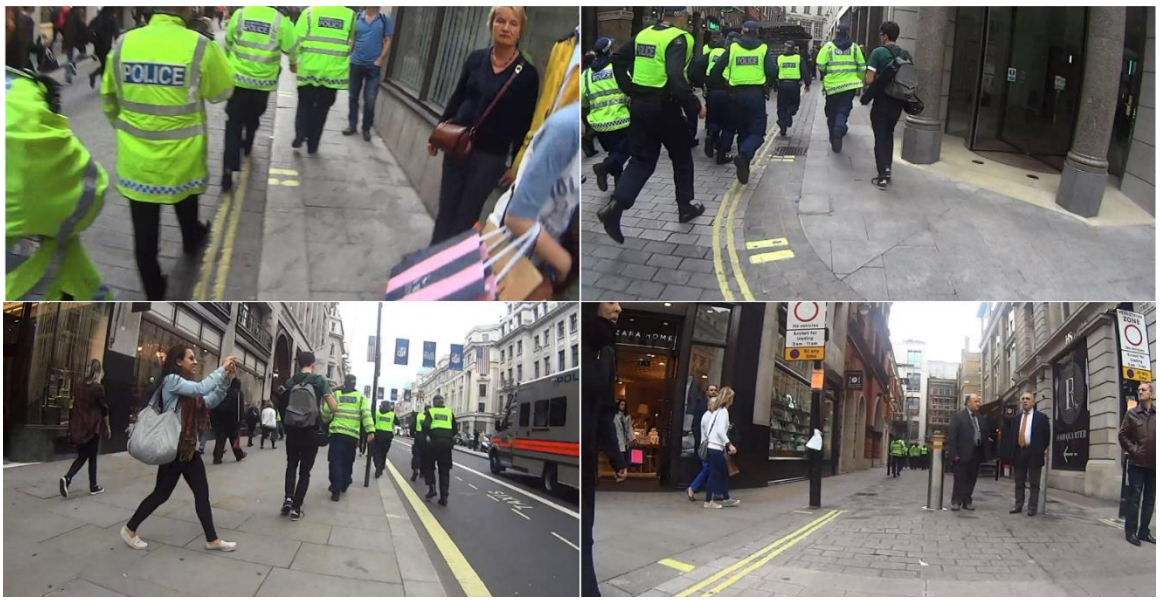


Fig 9.7 | TUC splinter

The agility of such actions must also be maintained. In the sequence of images above the protesters who have splintered are far out in front; having made their escape seconds ago. It takes a good while before I witness any members of the TSG run past me in pursuit. As I start to fall back from the main group I start to focus exclusively on the movements of a smaller number of TSG officers ahead of me. At the junction of Regent and Heddon Street the group splits; one half continue along the former whilst the other half split down the latter. Only later, upon uploading the GPS track to my computer do I notice something awry. Heddon Street leads nowhere. In fact, all it does is loop round the back of a row of shops and restaurants back onto Regent Street. Either the TSG found a secret passageway linking Heddon Street with Saville Row or, more conceivably, their navigational knowledge of London had collectively failed them. I don't stick around to find out, however, chasing the Regent Street group northwards. Like many in pursuit they switch

between running, jogging, fast walking and stopping to catch a breath. In splitting – or indeed, *splintering* – the group they have tried to cover as much ground as possible. On this occasion, however, they fail to match the protester's agility.

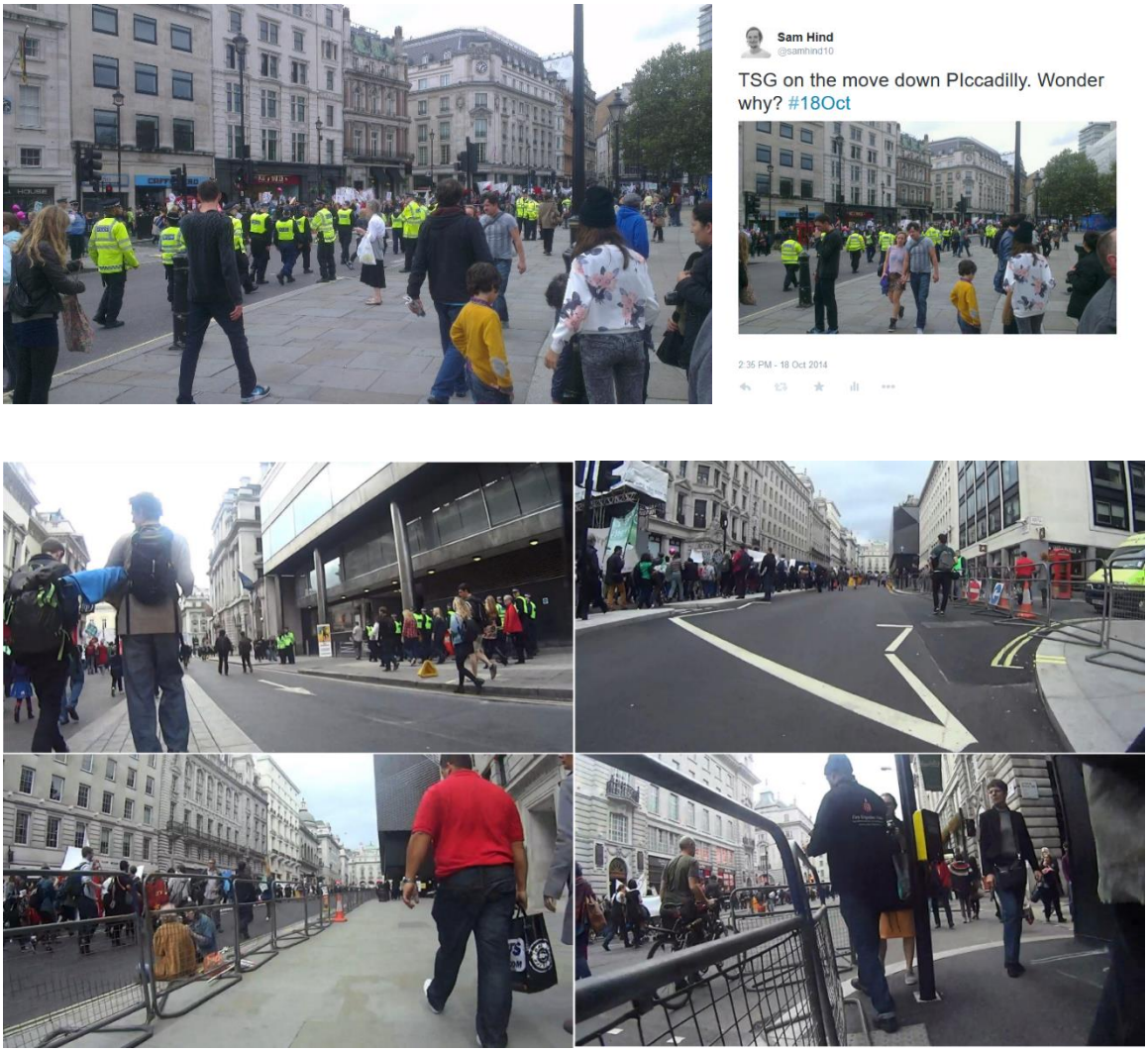


Fig 9.8 | TSG on the move

The splinter manoeuvre must always be defined in relation to a principle body. As such, it can never fully break away. The red line on the map that runs from east to west is a GPS trace of my movements on the day of the TUC demonstration. The splinter radically re-routes it north onto Regent Street and away from the A-to-B route along Piccadilly, taking a complete detour through Mayfair and down many smaller roads (Conduit Street, New Bond Street, Old Bond Street) before re-joining Piccadilly a few blocks from the Green Park underground station. The main march route,

in contrast, extends across the full extent of Piccadilly from Piccadilly Circus to Hyde Park. Notice that despite 'splintering' from the main route and heading off in the direction of Mayfair, the line nevertheless returns to be subsumed onto the A-to-B route once again. Many others who were either part of the splinter or followed it, did similarly; returning to the main demonstration heading towards the final rally point in Hyde Park.

For the splinter to work, it actually must not be anticipated at all. This is a political rather than a technical point, however, concerning the desire to impose of a 'grammar' (Agre 1994) onto a spatial manoeuvre. It is a dynamic that radically affects the extent to which one can practically capture it for navigational purposes. Whilst the splinter may have been decided upon prior to its carrying out, its spatial and temporal characteristics must remain invisible to those outside for it to act as a disruptive action. In other words, *politically* it cannot be rendered on a cartographic plane as this would curtail the effectiveness of the action.

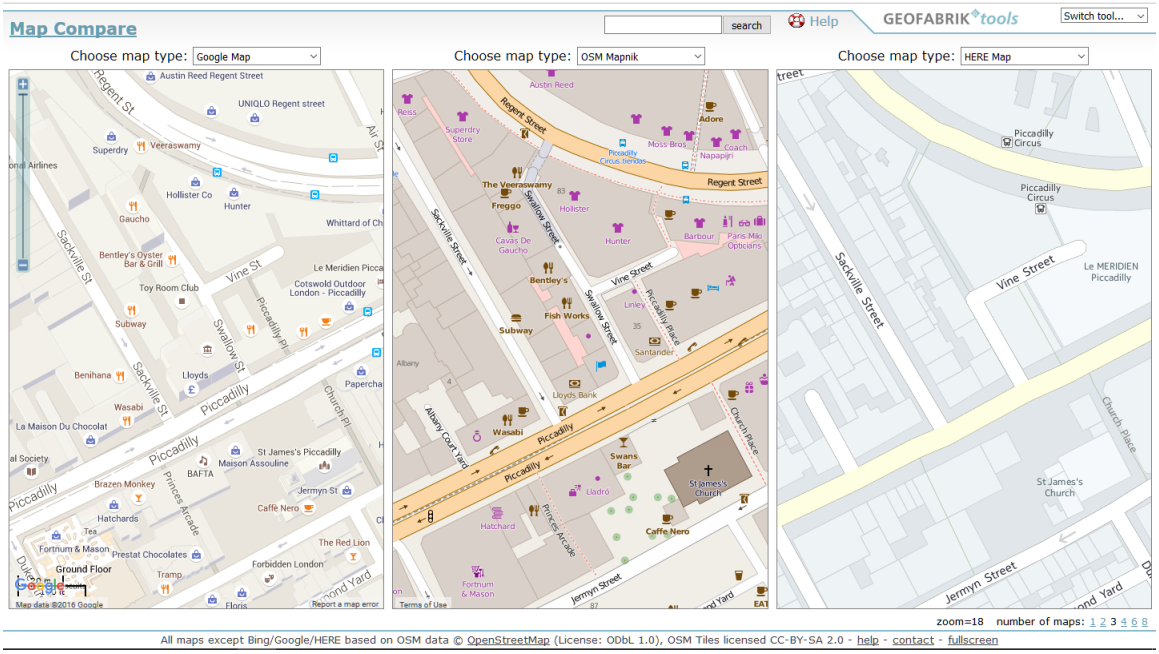
In the build-up to the Swallow Street splinter, I'd taken a photograph of a TSG unit heading westward on the route towards Pall Mall from Trafalgar Square. I'd also tweeted a similar photograph questioning their movements at the time – erroneously supposing they were already at Piccadilly. Video footage I continued to shoot shows them walking up along Pall Mall toward Waterloo Place, before I overtake them and decide to mingle with non-protesters on the other side of the metal barriers I described earlier. All of this was taking place towards the back of the march where a number of smaller non-TUC affiliated groups had assembled.

Only a few minutes after, the splinter had begun and these same metal barriers (shown in an 'open' position in the final frame) had been lifted up and a small body of people had hurriedly passed through them. Both the TSG and I had reacted just as quickly as the other. That is to say, not very fast at all. Although each of us were aware of smaller groups towards the back of the demonstration who possessed the possibility and political persuasion to perform a splinter move (judging on their clothing, flags, pyrotechnics and other material), neither had prior knowledge of

that exact point at which it was to be carried out. Needless to say, the splinter is a flexible, dynamic tactic – one designed to be resolutely of-the-moment. However this needn't be the kind of of-the-moment action as defined by de Certeau (1984). The splinter, as the video frames, photographs and GPS tracks have shown, emerge 'generatively' out of a longer, 'wayfaring' line (Ingold 2007, 75). In representing future movements cartographically, the potential of the action would be completely nullified. By its nature it needed to operate extra-cartographically.

But alongside this tactical necessity of ensuring the manoeuvre remains off the map or 'extra-cartographic', I also contend that the splinter exists at the *technical* limits of being mapped. What would happen if the decision was taken to relay the relevant information on a splinter manoeuvre through the Sukey platform? Here we have to think about what is necessary for this future moment to be rendered cartographically. Once again, we return to Agre (1994); supplemented by November et al. (2010). Consider the first step in the former's capture model - *articulation*. The activity must be analyzed and comprehended in order for it to then be packaged in a cartographic form. How voluminous is the splinter? Where does it begin? Where will it end? When will it return to the A-to-B route? The *who, what, where, when* of the activity that enables its verification, dissemination and mapping.

As suggested above, the key dynamic of the splinter is that the time and place of the activity is not to be widely known, otherwise this undermines the aim of the splinter itself – to disrupt. If this navigational information was circulated publically, the manoeuvre would lose its ability to act as a foreign body thrust into the wider urban fabric in the name of disruption. Yet technically, this would simply demand that the two elements are presented on the map itself or in an accompanying tweet. Once the time and place were known to all users and filtered through the protest crowd, all that would need to happen is that that barriers were opened and the splinter would begin.



Map 9.4 | Google Maps, OSM and HERE

Of course, this is somewhat fanciful. Sukey itself was a public platform and every 'printout' to use November et al.'s (2010) terms – that is, every map, tweet and material update – was publically accessible. If protesters were able to see the time and place of the splinter, so would anyone else; including the police and other parties intent on preventing the manoeuvre. As such, it would prove politically impossible under such circumstances, despite the technical possibility of the cartographic endeavor. One would presume the police would simply block the entrance to Swallow Street and the activists would be forced to continue along the A-to-B route.

Nevertheless, a shift from using Google Maps in Sukey 2.0 to OSM in 3.0 was designed to proliferate and multiply any possible splinter manoeuvres. Whilst there was an ethico-political dimension to this decision based on a desire to utilize open-source map data, it was also based on a difference in the cartographic clarity of each basemap. As I have previously identified (Hind 2015a, n.p.): the ability for protest map users to 'easily distinguish – through colour, style and thickness – each road designation mak[es] for quick, easy referencing when on the move'. The image above is a comparison between three mapping platforms: Google Maps, OSM and HERE. Each is focused in on the same street that the splinter manoeuvre was performed along.

Consider again the Swallow Street splinter. If one were to calculate the possibility of getting from Piccadilly to Regent Street the answer would likely be different depending on which mapping platform was consulted. In Google Maps we encounter a problem. Swallow Street is appropriately labelled as such, with Vine Street extending east.[35] Both are depicted in white like any other at this level.[36] Problems arise, however, as one approaches the Regent Street end. Due to the 3D features in Google Maps, the building that houses the Gaucho restaurant obscures a length of the road; disappearing out of sight behind it. Still worse, it then transforms into a non-vehicular path as a shadowed line rather than the previous white line as depicted in the lower half of Swallow Street. To complete this rather confusing situation the brief shadowed line disappears completely underneath a Regent Street building housing more retail stores – never to re-emerge.

Fig 9.9 | Archway from Swallow Street to Regent Street

In contrast, OSM makes critical, visible distinctions at these various points. Swallow Street is labelled at both the lower, vehicular end and at the higher, non-vehicular end to assert the continuation of the designation if not the road style. In other words, to assure map users Swallow Street is still Swallow Street. Nevertheless, the change in colour (from white to grey) assures users they are aware it no longer allows vehicle access along its upper half. This important distinction

[35] Although never used in the Sukey platform, but visualized here for comparison, the HERE map fails to even label Swallow Street, Instead, it mislabels the lower portion as an extension of Vine Street. The upper portion extending towards Piccadilly is depicted ambiguously as a narrow shaded line. In any case, it does not show as a passable street.

[36] In Google Maps all road types are visualized at this level in the same colour (white) with no distinction between main roads (such as Piccadilly, Regent Street) and smaller thoroughfares (like Swallow Street, Vine Street), beyond line width and overlain traffic flow arrows.

allows those to evaluate the benefits of splintering down a route with no vehicle access. What is equally important, however, is knowledge of where Swallow Street ends up. Neither in HERE or Google Maps is this entirely clear – leading to a significant degree of doubt. In OSM Swallow Street is shown as connecting to Regent Street under an archway rather than disappearing out of sight as in Google Maps.

For activists desiring to successfully execute splinter manoeuvres such as this one, details regarding access and egress are critical. Navigational knowledges gained through, and mediated by, platforms such as Sukey have therefore been integral to their proliferation and multiplication during protest events. Yet, with neither version of the platform deployed during the TUC and NCAFC demonstrations, opportunities for identifying possible routes were restricted to protester's already-existing navigational knowledge (rather than being presented in cartographic form). As such it curtailed the possibility of more splinter manoeuvres being performed, and event-sensitive navigational knowledges to circulate.

However, this opens up a critical issue within the mapping of protest events that will be continued in the next section. Firstly, that neither political necessity nor technical capacity necessarily exists in order for phenomena to be mapped during protest events. Sometimes things *need* to remain 'off the map' or 'extra-cartographic'. In contrast, sometimes things cannot be placed on the map because there is not the technical ability to do so. In other words, that the phenomena itself is too unruly, too contingent and too unpredictable to be rendered at all. Secondly, that the technical capacity and political necessity of cartographically capturing phenomena do not always align. Whilst they have the potential to co-exist they often do so in tension. In the above example whilst it would be technically possible to map a splinter manoeuvre *if* details regarding time and location were pre-arranged to be mapped, doing so would cancel out its intended effects. That is, to be 'unanticipated' and therefore disruptive.

Rhizome: Cat-and-Mouse Affairs

As outlined in chapter 2, the rhizome exhibits a number of qualities essential to its operation. Theoretically it is a rootless, playful and spatially unpredictable manoeuvre. In the first instance, following Deleuze and Guattari (2011), it privileges connectivity and heterogeneity, remaining open to all sources of strength and growth across the urban environment it finds itself in. It is also built on the principle of multiplicity wherein there is no categorical distinction between those comprising it. As such, it gains its disruptive strength not through a core power but as a result of collective momentum. Further, participants do not regard any 'rupture' as a threat to the manoeuvre's existence, but as a generative force. On the contrary, with each break it grows stronger. Then, to complete this re-cap of qualities, the rhizome is never a tracing of a previous series of moments but an entirely new 'mapping'. There is, therefore, no template for its coming-into-being. It is this cartographic contingency that is the rhizome's greatest strength but also its latent weakness, as the following will hopefully reveal.

I came across one such manoeuvre at precisely 3.41pm during the NCAFC demonstration. Predictably, like many of my attempts to capture protest manoeuvres, it had already begun. As dutifully confirmed through first-hand accounts on Twitter (Taylor 2014) and live reports on the *Guardian* (Phipps 2014), the Department for Business, Innovation & Skills (BIS) was targeted by protesters, with paint thrown at the windows of 1 Victoria Street, and attempts to occupy it.[37] Once the initial moment had passed at BIS, protesters continued down Victoria Street. Only a few strides away, on the same side of the street, lies a Starbucks coffee shop.[38] Glimpsing an

[37] Although away from the official march route, BIS was targeted for its involvement in facilitating the rise of HE tuition fees. BIS have been responsible for making a series of other contentious decision regarding HE, according to student activists, including the abolishment of the Education Maintenance Allowance and the more recently proposed (and swiftly abandoned) student loan book sell-off (McGettigan and Chakrabortty 2014).

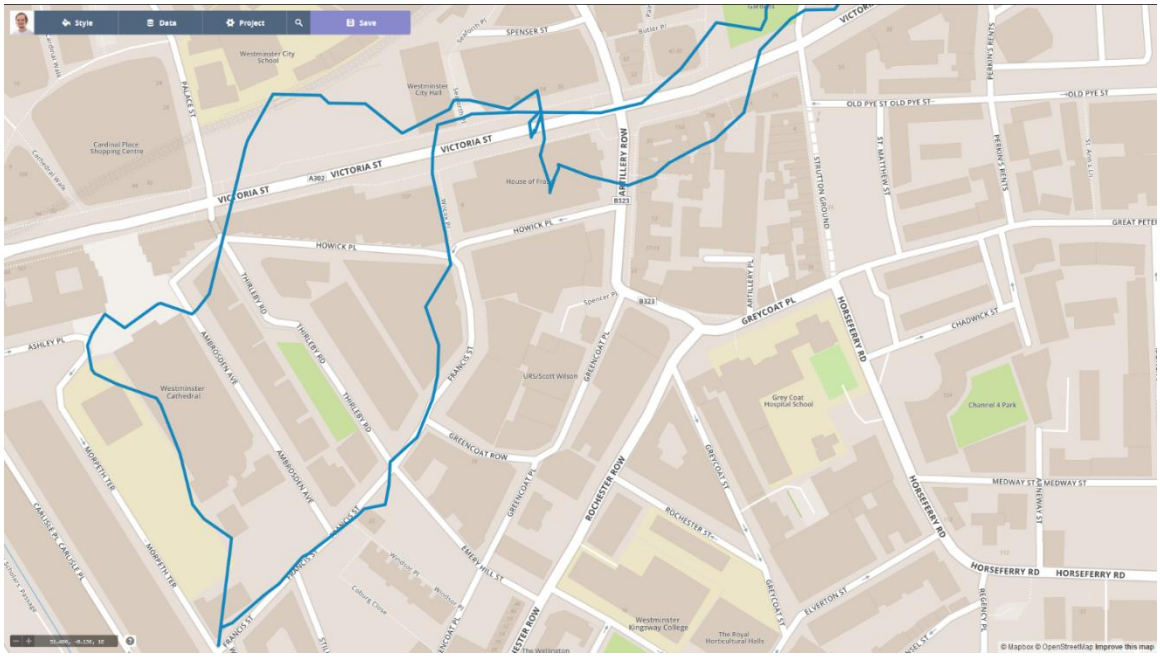
[38] During the last couple of years the company had garnered much unwanted attention, after it was revealed they had paid 'just £8.6m in taxes on a reported £3bn in UK sales since 1998' (Neville 2012, n.p.). As such, they have borne the brunt of public anger – especially at demonstrations such as the student one in November 2014, and past UK Uncut events.

opportunity, protesters decided to target it in much a similar fashion. Once again, paint was thrown both at the shop and at TSG officers dispatched to follow the protesters. Press images from the day provide an iconic representation of the cat-and-mouse battles between protesters and police, depicting the TSG officers both under attack and as somewhat militant defenders of private property.

Fig 9.10 | Starbucks. Source: Justin Tallis (2014)

Yet both these flashpoints occurred before I was able to reach the area. As the sequence of images attest to, the same TSG officers who had just responded to action at BIS and Starbucks had already appeared at, and 'secured', another scene. This time, the TSG officers were attempting to prevent protesters from targeting other retail and restaurant chains along Victoria Street in much the same manner as the other two moments. As the images suppose, ascertaining the precise details of each incident required a concerted degree of investigation. The rhizome itself had temporarily been suspended in light of the actions that had occurred in the previous 15 minutes, and the

participants instead had decided to float around a more specific area outside the Leon restaurant chain.



Map 9.5 | NCAFC rhizome I & II

At this point, another TSG unit can be spotted in frame one. Different from the ones visible in the image outside Starbucks, this particular set of officers are more heavily equipped with standard-issue, public order visors. With the threat of being hit by either flying paint or other such projectiles it seems as if senior officers in charge of TSG deployment have sought to equip some, but not all, units with the necessary protection. Nevertheless, they remain attached to each officers' belt rather than in use, as the unit remains on standby outside Leon, close to other units deployed to gain territorial control outside All Bar One. On this occasion, the TSG officers involved have formed a horseshoe formation preventing access to the building, and are denying passage to both protesters and customers. During this time, neither protesters nor police show a desire to move on elsewhere, both seemingly content with the drop in intensity following a series of dramatic, high-speed moments.

Fig 9.11 | NCAFC rhizome I

What is important to note is not only how quickly these flashpoints occurred, but also how speedily they regenerated and begun again. The raw video footage from which the sequence of images is drawn begins at 3.41pm, as mentioned above. In 3 minutes 25 seconds – after the arrest of one individual and the protection of the arresting officers by an entire TSG unit – the protesters spot an opportunity and the rhizome once again builds a collective, navigational force. Heading even further away from the designated A-to-B route, the rhizome then continued moving west down Victoria Street.

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The second rhizomatic moment I managed to capture consisted of a dummy manoeuvre emergent from the state noted above. Its occurrence is important because it brings into question the contingency of all of the spatial forms discussed so far. Each does not ever appear fully formed as complete(d) occupations, splinters, rhizomes or containments – despite the neatness of metaphorical, typological categorization – but must *emerge* through collective construction, from a wider environment of potential spatial manoeuvres.

At 3.46pm – only 5 minutes on from the beginning of the video footage, and after a lull in which the protesters begin to move through Victoria again, although at walking pace – there is suddenly an increase in speed. On the footage itself there are shouts from one individual behind the camera that provide a stimulation for a change in urgency. Another out-of-shot individual is also heard shouting "run, run!", this time with more clarity, and the protesters in front of me start to move with a greater purpose. The second frame shows the big reveal. The reason why the protesters are being urged to run is that members of the TSG unit deployed to give chase to the protesters have decided to run rather than walk. Although support vehicles can be identified on the right of the original footage by their blue flashing lights, positioned to the north of the action on Victoria Street itself, there is no direct attempt to contain or apprehend any individuals. Nor is there an attempt to block their forward (and evidently disruptive) movements.

Nevertheless, the police continue their manoeuvre down past Westminster Cathedral towards Ashley Place. Yet by frame three the TSG unit are back to a walking pace, seemingly content with the impact of their action – despite not having initiated any containment tactic, nor imposed restrictions on the disruptive movement of the group. Why, despite the manoeuvre taking place through an undesignated area of the city, might the police not be intent on curbing the extent of their eminently disruptive movements? Especially bearing in mind the attacks on private property only a few minutes previous? As the original video footage rolls on, however, all becomes clear. As the road markings in frame four suggest, the pedestrianized area outside Westminster Cathedral leads into Morpeth Terrace – right outside a primary school. As the week day (Wednesday), date (November 19th) and time (3.46pm) indicate, children are being picked up from school. As is again evident in the original footage, and visible in frame two; the TSG officers are only jogging.

Once the police officers exit the pedestrianized area and head onto Ashley Place, they immediately stop jogging and resort to a gentle walk – as seen in frame three. The school is directly in their

collective line of sight, towards the left-hand edge of the frame. The majority of protesters are now beyond them heading down Morpeth Terrace (the road flanking the primary school). Whether the police manoeuvre was deliberately deployed in order to provoke the protesters into picking-up speed is open to interpretation. However, the factors involved – including a lack of command gestures, the speed of police response, the short length of the police manoeuvre and the convenience of particular locations – all point towards an attempt to lure the protesters into making a threatening manoeuvre.

Fig 9.12 | NCAFC rhizome II

What this second part of the example shows is the often amorphous, pulsing nature of a rhizomatic manoeuvre that can be characterized as much by decreasing intensity as the inverse. The rhizome metaphor is apt for describing it not only because it captures its territorial and de-territorial qualities, but articulates them as either side of the same coin. That is to say, as co-constitutive rather than purely antagonistic actions. It is this understanding that pulls apart the false distinction between tactical and strategic engagements, as discussed in chapter 3. Tactics do not generate purely de-territorial actions, and neither do strategies wholly produce territorial ones. One is not decided entirely 'on the wing' (de Certeau 1984, xix) with the other decided upon

in advance. Such a manoeuvre is an ongoing dance between de- and re-territorialization; between 'improvisation and speculative way-finding' (Gerlach 2015, 8).

Further than this, it is perhaps clearer now to argue that the distinction between protesters and police within a protest situation is equally not one of a difference between tactical and strategic possibility – between the ability to perform de-territorial and territorial actions. Instead, the distinction relies on the ability to align a 'series of dissimilar signposts' (November et al. 2010, 593) along a navigational trajectory. In both parts of the rhizomatic manoeuvre it is clear to see how such signposts align. In the first instance, the navigational alignment occurs as the TSG officers realize another threat is to materialize – this time in the case of an attack on another retail property. Once the direction and intensity of the individuals is identified and recognized, it begins to be acted upon by the officers; leading to an apprehension of those involved and a securing of the location to prevent further possible actions. The sequence of images evidences this navigational practice.

In the second instance, the alignment occurs when officers approach the vicinity of the primary school and reduce their speed to a gentle walk. In order for the action to be carried out, three signposts have to be travelled between. First, the location of the school is determined either by prior tacit knowledge, or by distant sight. Both of these are possible – perhaps even overlapping to secure the otherwise precarious knowledge of the other. Secondly, the action is initiated by a command – a barely perceptible one to those around – in order to increase speed and narrow intent. Then thirdly, the line of sight from the collective group of officers is established with the critical location (the primary school) in order to bear witness to the accomplishment of the action. That is, to ensuring that the only individuals running at full speed past a school, in full view of waiting parents and children, are the protesters themselves.

Nevertheless, it is only in the rhizome that this co-constitutive de-/re-territorialization occurs. As such, it holds the key to understanding the disruptive dynamic. The art of disruption is not one of

absolute chaos. It does not generate a lack of order. Within the protest event, disruption is always a delicately-balanced performance. Whilst it may be conceived as an increase in intensity, this disruptive potential cannot be realized entirely by ever-more frenetic manoeuvres. Instead, and in order to gather the force to navigate through various dissimilar signposts, there must be lulls in which the rhizome is able to re-generate.

Yet none of this is entirely evident in the map itself. In fact, much of it lies far beyond the capacity of the map. Thus, what is most critical to comprehend is that these micro-political engagements remain at the lower-end of digital perception and capture. Whilst it is easy enough to record and analyze *post-event* it is, even in the contemporary era of 'real-time' capacity, unerringly difficult to cartographically capture events *in medias res*. That is to say, the technological ability to record, validate, map and then act upon such information remains entirely beyond the realm of possibility. Even in moments of relative calm – the troughs between the peaks – there remains an external, unknown capacity unreducible to a cartographic mode of existence.

It is the rhizomatic manoeuvre that provides this contingent relation between possibility, probability and actuality; hence why in order to combat such, the police resort to a number of tactics in order to curtail its effectiveness. Sometimes this involves direct attempts to prevent its navigational capacity and foreclose the future, as Louise Amoore (2013) discusses in relation sovereign border practices. On other occasions, this involves the apprehension of only the apparent 'ringleaders' in any disruptive activity. But the rhizome, like all good autonomous actions, is essentially (although not absolutely) 'leaderless' (Gerbaudo 2012, 13). It lacks an identifiable instigator to conduct the manoeuvre itself, and as a result such attempts spectacularly misinterpret the spatial form and force of the action in question. The low success rate of prosecuting protesters for such public order crimes, especially during the 2010-2014 period, is evidence of this autonomy of intent. No individual, or group of actors, holds the organizational intent for orchestrating a rhizomatic manoeuvre.

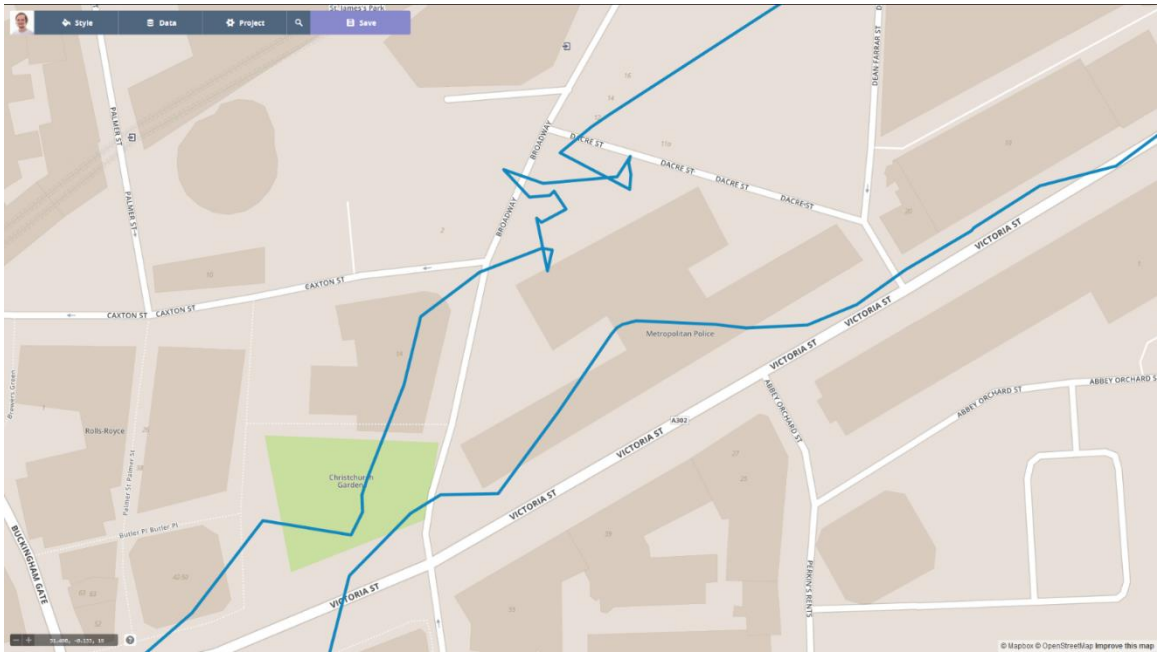
Disruptive cartography, therefore, is not always capable of delivering what it desires to achieve. Not everything aligns as it should, and not every trajectory is realized. The moments discussed here were but two of many tiny dramas that similarly took place whilst Sukey was active. Their ability to be captured, then, is always dependent upon an array of unruly factors. This, it turns out, is both its undeniable strength and unavoidable weakness.

Containment: 'In or Out? In or Out?'

As discussed in detail in chapter 2, a containment is a police manoeuvre entailing the capture of protesters within a particular, bounded space. As such, it is not performed by protesters – hence why the Sukey platform became known as the 'anti-kettling app' during its use. Containments are designed to minimize the disruptive capacity of a crowd by denying both individual and collective spatial mobility, taking many forms (see; Sørli 2012). In order to do so effectively, containments at protest events can occur for a number of hours, until officers are assured no further disruption will occur. The manoeuvre also offers ample opportunity for mass data-collection and intelligence-gathering, operationalizing big data capture for the purposes of anticipating future activities.

The containment I wish to focus on here began outside Scotland Yard – the Met's headquarters – during the NCAFC demonstration. As a result of the proximity to the march route and final rally point, it was already being policed by a high number of officers. It also meant that many were on hand to assist with the containment, joining up with the more mobile TSG officers that had spent the previous hour following protesters around Victoria. Nevertheless, as seen in the sequence of images below, it was still primarily the TSG officers that carried out the majority of the kettling itself, whilst their Scotland Yard colleagues maintained their positions. Note the subtle differences in uniform. These slight variations signify officer ranks, skills, roles and therefore intent. With this in mind, it becomes easier to identify the potential protagonists in the orchestration of particular manoeuvres. Unlike in 'defensive' TSG deployments, mobile officers do not carry heavy riot

protection such as visors or shields unless in severe situations. Commonly, for events such as the student demonstration here, officers wear minimal protection including small peaked caps and utility vests. The units are therefore more agile, and prepared for anticipated disruptive activities. Thus they possess the ability to 'switch on' and 'switch off' containments in mere seconds.



Map 9.6 | NCAFC containment

The kettle on Broadway was a rather straightforward, static containment with similarities to the 'bridge' version as described by Sørli (2012). As can be seen from the sequence of images, the street is a relatively narrow side-road; considerably smaller than Victoria Street it branches off from. As the commanding officer begins to direct his colleagues into position – ensuring they form a secure enough line to prevent the passage of protesters – the solid façade of the Grade II-listed St. Ermin's Hotel comes into view on the left-hand side of the second frame (top right). With the temporary metal fencing outside Scotland Yard forming the other side of the containment the officers promptly block egress from either end. Their aim, it seems, is to prevent a greater congregation of protesters outside Scotland Yard and to split the rhizomatic crowd in two.

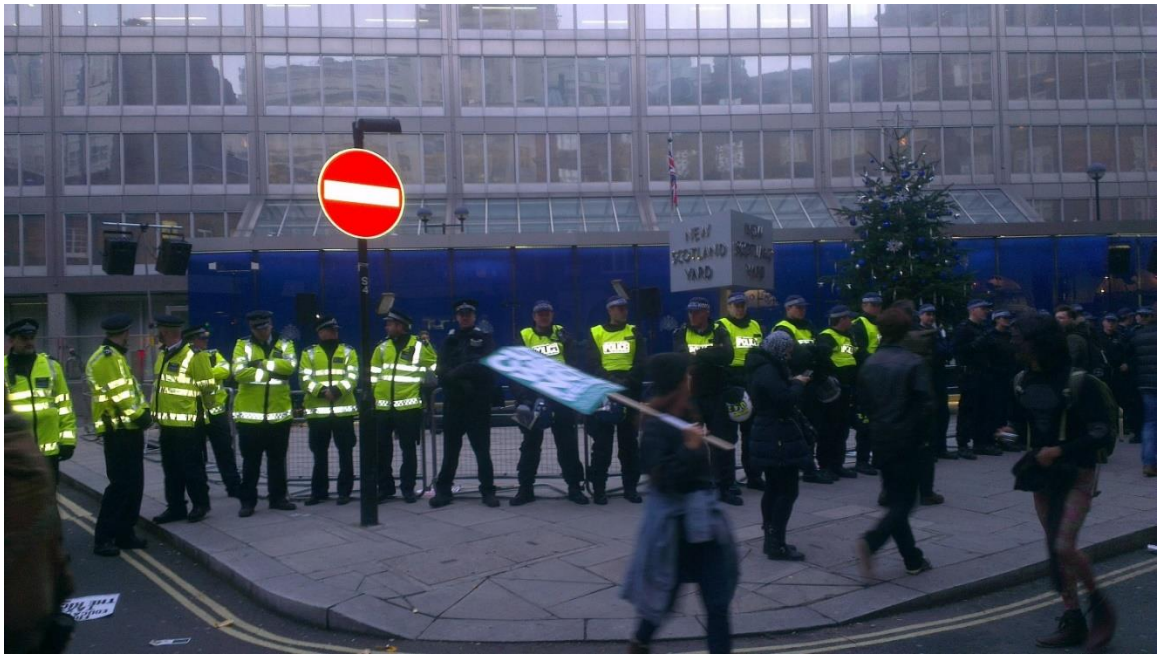


Fig 9.13 | Uniforms, Broadway

Yet when a containment comes into being, its form is initially porous; forcing protesters to make a snap decision on where to go. As the third frame shows (middle left), the line of officers is less a smooth continuous formation and more a zig-zagged interpretation. Yet by frame four, only a few seconds later, the officers have begun to close together and face outwards as more protesters attempt to rush the forming line. In between these snapshots of an otherwise fluid, contingent process, I found myself have to make the same calculation. Nevertheless, I did not make it through my own free will. The officer with his hand raised in the following frame (four; middle right) is in the process of physically grappling with me whilst shouting “in or out, in or out?” as I weigh up the benefits of each, before deciding on “out, out, out” and being pushed back beyond the emergent cordon. As the line becomes to solidify, one officer shouts to “hold it across the road, facing that way” whilst pointing with both hands back down towards Victoria Street where both officers and protesters have run from.

By frame five (bottom left) the officers primarily face inwards towards those trapped inside the kettle. This is essentially because those that pose the greatest threat to the failure of the manoeuvre, at that particular point, are those contained within with the desire to break out. Those

on the outside, although of possible annoyance to officers maintaining the line, do not possess as greater threat to the security of the containment. Still, some have the potential to cause greater disruption if they and fellow protesters find themselves literally in-between the line itself. The two protesters in the foreground of frame five are in the process of remonstrating with an officer who is alleged to have assaulted the protester in the red shirt. As the disagreement continues, more officers cement the impermeability of the line and suddenly, the individual in the green shirt finds himself *inside* the containment as the officers seek to diffuse the situation by splitting the individuals apart.

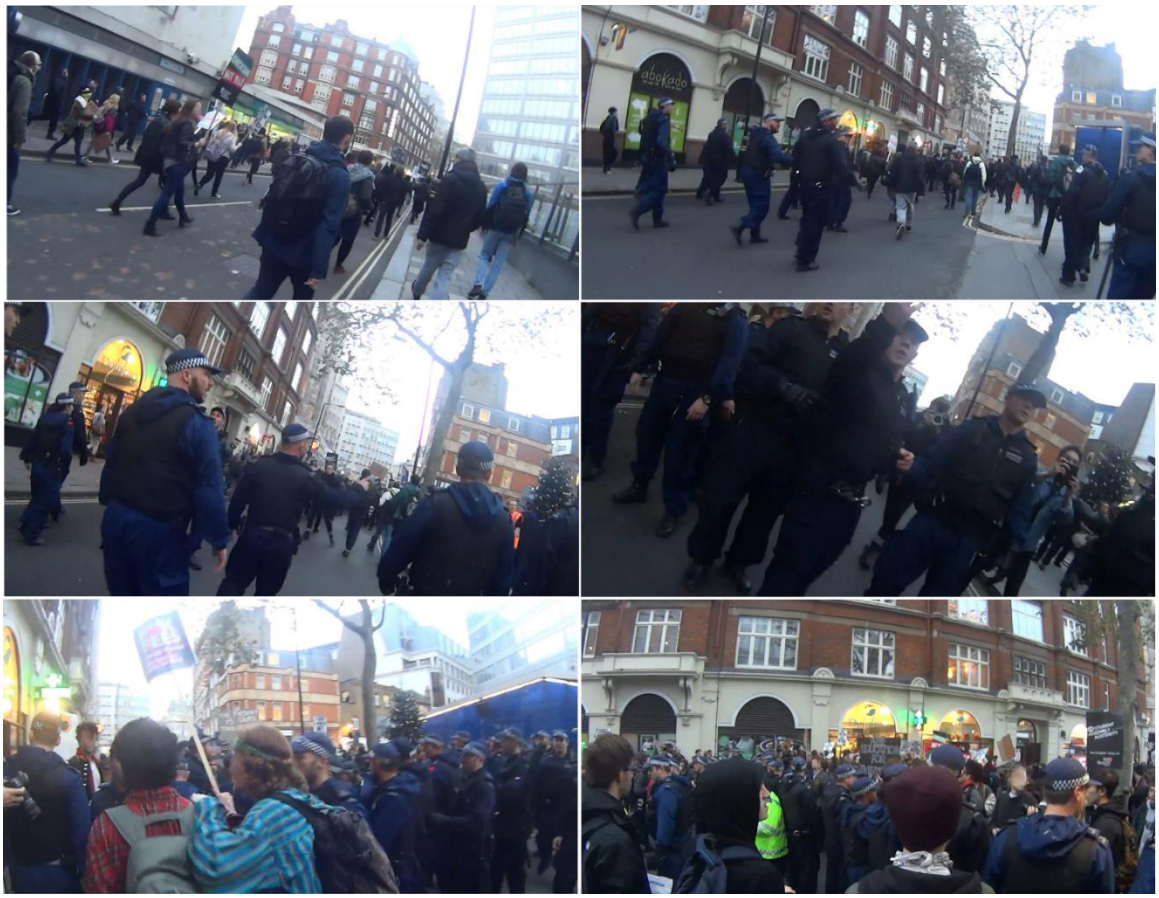


Fig 9.14 | NCAFC containment

Whilst the Broadway containment bore similarities to both static and bridge containments, there were also some considerable differences. The most notable of these concerned the length of deployment. In each enacted kettle the commanding 'Bronze' officer must ensure that the threat of disruption has diminished enough to release the protesters. During many of the events over

the 2010-2014 period, the average length of time each containment was deployed varied hugely. The infamous Westminster Bridge containment of December 2010 saw protesters contained for 2-4 hours as Dan Hancox (2011a) recounts. One of the easiest methods of diminishing the disruptive capacity of an assembled crowd is to exhaust them. The containment commonly operates according to this logic.

Others, however, are shorter affairs. Indeed, the Broadway containment was a comparatively brief one, lasting no longer than 20 minutes. Once officers were assured the threat of imminent disruption had diminished, the containment was relaxed and protesters were allowed to continue in whatever direction they desired, with no further restrictions on their movements. In previous situations this is often the case: protesters, whilst nominally 'free', are ordered to disperse in a particular direction, usually away from the area in order for the space to be neutralized. In this case, protesters were free to go wherever. Most continued their protesting and returned – having spent the past hour running through the streets of Victoria – to the now-occupied Parliament Square. Whilst the containment was not responsible for the curtailment of the protest more generally, it did prevent the ongoing cat-and-mouse activity that was being carried out nearby. In situations where Sukey was deployed, this would have been regarded as a tactical failure – reducing protesters to immobile, predictable and less-than-disruptive individuals once again susceptible to being contained.

The static occupation continued in Parliament Square, where earlier 10ft-high event fencing surrounding the grassy area were torn down and waist-high 'box barriers' scaled. Yet, during Sukey's deployment from 2010-2014, any 'static', public demonstration was seen as an unnecessary risk to the ongoing possibility of police containments. Any occupation threatened the safety of those participating. Maintaining mobility – at the expense of protester volume, direction, knowledge of action – usurped any of the advantages of a static occupation or protest in the city streets.

The fact that no direct data-collection was undertaken in the guise of a mass containment and arrest does not disprove the claim that the police tactic of kettling during protests is a data-driven pursuit. On the contrary, it only strengthens this hypothesis by suggesting that the police maintain the *possibility* of enacting mass data-collection practices *at any time* during demonstrations and other such public disturbances. Such containments are designed to aid not only in the prevention of immediate or imminent disruption, but also future disruptions.

This suggests that the containment does not begin precisely at the moment it is brought-into-being. A 'successful' kettle is not necessarily one that manages to capture activists. In many cases, a containment succeeds purely as a result of *threatening* to come-into-being. This is what Shields would call a 'virtual risk' (Shields 2003, 195). The containment manoeuvre functions precisely because it is indeterminate. The mere *possibility* of its existence is enough to force protesters into taking immediate action, thus justifying the deployment of the manoeuvre. As Shields (2003, 197) further suggests:

> Threats are asserted, they are a matter of perception and are feared because they may materialize as concrete danger. The intangibility of threat derives from the difficulty of calculating the odds, thereby converting it into a risk. Particularly in a situation where one does not have the benefit of historical experience or statistical summation, such as a personal encounter with a 'threatening individual', one faces a highly unstable decision line demarcating responses such as 'flight' or 'fight'.

This echoes the nursery rhyme from which Sukey takes its name. Polly and her sister knew the effect such a threat would have on their brothers. It was not the actuality of the tea party that forced them to flee, but the mere threat of such. The Sukey platform was designed to ameliorate such a threat – turning the containment from a virtual risk into a 'concrete danger' that users could act upon. It allowed protesters to process the navigational knowledge that gave shape – textually, visually and cartographically – to an otherwise unknown, unknowable, intangible force.

The ‘decision line’ that Shields mentions is therefore manifested at the brink of a containment, forcing a decision to be made: “in or out, in or out?”. Rather than a movement line in the form of a ‘trace’ or a ‘thread’, the decision line is a ‘rupture’ in the territorial surface (Ingold 2007, 44). With Sukey active, this decision need not be made at the brink of such a rupture, but in advance, and in anticipation of it.

In Sukey’s absence the containment returned to being a virtual risk rather than a concrete danger for protesters, allowing the officers performing such manoeuvres to project an idealized (but nonetheless real) situation into the protest space (a containment is forthcoming). Put otherwise: it reduced the likelihood that protesters would continue to engage in disruptive activities if they were not able to calculate the possibility of a containment coming-into-being. The threat of a kettle is no less real for it. But as an assertion, and without recourse to reliable, verifiable textual, visual or cartographic evidence it nevertheless remains actionable. One cannot ignore a possible containment. Yet without the ‘historical experience’ that Shields identifies of attending demonstrations, witnessing police manoeuvres, and participating in the crowdsourcing of navigational knowledges, second-wave student activists were left with reduced perceptive capabilities. Invariably, the result of such a situation is the increased possibility of being kettled – and with it, of being subjected to mass data-collection.

Conclusion

This chapter has sought to extensively detail four kinds of spatial manoeuvres witnessed during two kinds of protest events; emblematic of a five-year period from 2010-2015. The first of these – occupation – is perhaps the most identifiable, yet during this period, its efficacy was muted – especially in light of increasing restrictions regarding the occupation of space in central London following the early success of Occupy. The collective taking of public space, therefore, became a considerably weaker manoeuvre from a spatial, operational and tactical sense. Each attempt was

performed with a different interpretation of risk and safety. In the 'Occupy Democracy' effort the 'safe space' concept (Kenney 2001, Hanhardt 2013) was mobilized in order to sustain a more inclusive, participatory occupation of Parliament Square. In the NCAFC effort, the occupation was carried out in relation to operational knowledges disseminated to student activists by their unions, and defined by a fallout between the NUS and the event organizers regarding an incomplete risk assessment.

The presence of a navigational platform such as Sukey would have, based on the evidence gathered here, altered these circumstances on three counts. In the first instance, an occupation of a single, well-defined public space would have most likely been discredited due to the increased risk of containment. Secondly, if performed, the continuation of any occupation would have been informed by, and mediated through, the Sukey platform and as such might have curtailed its effect due to the desire for more mobile forms of protest. Thirdly, the Sukey platform would have replaced any existing institutional knowledges regarding risk and safety in the NCAFC demonstration, ensuring that participants were provided with navigational knowledges otherwise entirely absent.

The second of these manoeuvres – the splinter – was repeatedly successful in its deployment, adding to the disruptive capacity of the protest event in general. Adopting a more mobile approach to the occupation, the splinter was nonetheless still reliant upon the volume and unified force of an A-to-B demonstration. Yet, in harnessing this, the splinter was able to re-direct individuals away from such in order to precipitate a more spatially and tactically radical effort. In so doing the manoeuvre came into direct opposition with the Met's legal responsibility to minimize disruption to the local community during a protest event. I suggest that Sukey would have again changed things. In this case, it would have allowed for the proliferation and multiplication of splinter attempts by providing the cartographic basis for the identification and

circulation of navigational knowledges – thus reducing the risk of participants heading down unsuitable routes.

The third manoeuvre – the rhizome – proved to be the most disruptive of all possible protest manoeuvres during this period. Differing from the splinter in its independence from any A-to-B demonstration, the rhizome provided participants with the opportunity to endlessly disrupt the urban environment during protest events by providing a level of contingency otherwise absent. Yet such a manoeuvre was dependent upon a collective paucity of navigational certainty – thriving instead on an unpredictability of direction that nonetheless was underpinned by an extensive navigational knowledge of the city streets. With Sukey live and operational, this spatial contingency was only enhanced, with cartographic updates on possible counter-manoeuvres generated. Nevertheless, much of the rhizome's success was predicated on both the speed and agility of any deployment, as well as this designed unpredictability. As such, Sukey's presence and capacity would have changed very little; the platform was neither technically able to anticipate rhizomatic manoeuvres by mapping their coming-into-being, nor was it political desirable to do so.

The final manoeuvre – the containment – differed from the other three in being exclusively performed by the police. Further, unlike the other manoeuvres, it was designed in order to minimize rather than maximize disruption. Far from either 'off' or 'on' – as the nursery rhyme goes – the kettle exists in a far more fluid, open-ended state as the example in this chapter shows. As such, containment manoeuvres can just as easily morph into another manoeuvre, transition into another form of kettle, dissolve entirely, or trick protesters into thinking it ever was, or intended to be, a containment. Thus, although Sukey was always depicted as an 'anti-kettling app', it was always much more than this. As a result of this dexterity and cunning, the process of capturing and cartographically rendering them on a mobile, digital mapping platform was fraught with difficulty.

In the final chapter of this thesis the significance of these qualified cartographic failures will be explored. Firstly, as expressed in this chapter, ‘capturing’ manoeuvres during protest events was difficult. Secondly, prescriptive aspects curtailed the ability of the platform to seamlessly circulate navigational knowledge. In addition to these, another more fundamental ethical concern drove the project into dormancy. It was neither premised on the technical challenge of capturing and disseminating ‘active phenomena’ in real-time, nor the political undesirability of giving cartographic shape to protester manoeuvres. Instead, this altogether more intractable issue I refer to as the quest for a ‘crypto-cartography’. It can be defined by its as-yet relative impossibility.

Chapter 10 | Failures and Carto-futures

'The continued tactical resistance of users, whether as temporary ad hoc interventions or more sustained organized networks…require an approach found on perpetual experiment "Install, update, crash, restart, de-install," *a digital version of Becket's [sic] dictum* "Fail, fail again, fail better".*'*

(Garcia 2013, n.p.)

'If we want to deal with the questions of strategy facing the student left then we have to begin from a position of failure.'

(Cant 2015, n.p.)

Whilst the Sukey platform was in a state of 'perpetual experimentation' (Garcia 2013, n.p.), and premised, like many digital projects, on an evolving array of 'intermittent accomplishments' (Hui 2012, 206), it can also be regarded as a cartographic failure. This concluding chapter interrogates the implication of this failure. Here I specifically look to three particular issues: the difficulty of cartographically-capturing unfolding events, the problem of 'correspondence' between cartographic 'signposts' in navigation, and the impossibility of a 'crypto-cartography'.

Firstly, then, there were a host of aspects to the platform and its deployment that rendered it variously ill-equipped, unresponsive or altogether obsolete for the purpose it was originally designed for. As an expressly 'anti-kettling' platform, it initially served one purpose. As these formations changed throughout the period of use, the nature of the kettle, as deployed across the urban terrain itself, morphed significantly. In fact, in most cases, each and every containment was entirely unique in form, volume, spatial extent and temporal nature. Moreover, when deployed

alongside other public order tactics of the kind explored in chapter 2, the containments became integrated tactics of a combined rather than isolated nature. Dealing with these 'quasi-kettles' therefore became somewhat challenging over time.

The technical capacity to digitally map containments in 'real-time' to be of tactical use, lagged behind the operational demand to do so, in order for users to continue protesting, avoid injury, avert data-collection or prevent arrest. Only in some instances was it entirely operational. Others, however, presented insurmountable cartographic problems for the platform, including, somewhat paradoxically, rhizomatic manoeuvres themselves that denied the possibility of 'capturing', verifying and disseminating navigational data. This unavoidable tension – between aiding the avoidance of containments and the generation of 'rhizomatic' anti-kettling manoeuvres – was at the heart of the cartographic enterprise.

Further, Sukey often failed to provide a navigational 'correspondence' for users between event phenomena and cartographic 'signposts'. As mentioned above the platform went through multiple iterations – each an attempt to re-articulate the aims and objectives of the project for an ever-changing landscape. Yet, the consequence of such, in the absence of the platform, has been a return to already-existing institutional forms to provide support in protest situations. That is, away from collaborative forms of knowledge-production back towards instructed forms in the shape of student union advice, 'buddy systems' and other such devices ostensibly designed to keep activists safe, mobile and informed during demonstrations.

Yet these were not the only tensions at play during these events. Another focused more explicitly on privacy and security, in which the developers of the platform strived towards developing a kind of 'crypto-cartography' through which users and collaborators in the digital mapping endeavour could be hidden from possible view and anonymized to any degree. The reason for doing so was to combat 'data-driven' efforts by the police to capture information *en masse* on activist identities, movements, organizational strategies and associations. This particular tension rested on the need

to validate geographical and tactical data delivered to the platform, as well as guaranteeing the privacy of those that had submitted the information. This resulted, somewhat in contradiction to conceptual arguments around openness, in the verification of a far smaller group of contributors than one would suppose was integral to collaborative project.

Capture Failures

Matthew Wilson and Sarah Elwood (2014, 231) argue that '[c]apture is fundamental to human thought, action, and culture', extending far beyond more recent interpretations exclusively associated with the taking of data by computerized means. As they continue, '[t]raditions of storytelling aggregate captured human experiences, just as these captured moments enable institutions of human knowledge' (Wilson and Elwood 2014, 231). The acquisition of data has been central to many forms of knowledge production throughout the centuries, including, of course, the process of mapmaking.

Philip Agre's deployment of the term is intended to 'bring to the surface the connotations of violence in the metaphor' (Agre 1994, 106) that is otherwise missing in strictly computational definitions. The 'capturing' of elusive or escaping phenomena, therefore, draws distinct attention to the ways in which cartographic practices, for example, have historically been complicit in instrumentalizing this violence. Indeed, cartography is but one example from a number of formalized practices that have, in some way, aimed to capture, define and catalogue lands, people and relationships. In this, capturing can arguably be conceived of as a form of 'imprisonment' (Agre 1994, 106) or incarceration – either in essence or in totality.

Capturing may involve a gaining of certain key coordinates of the activity or action in question. In this sense, the activity still exhibits an 'excess' that the capturing/tracking process cannot entirely account for. For example, in the decision-making or reason behind a particular action, some aspects remain un-captured or even 'un-capture-able', despite its openness to further speculation

and analysis. The suggestion here, then, is that this capture process is always necessarily incomplete. In protest situations, this incompleteness becomes readily apparent.

The second meaning of 'to capture' concerns the *capacity for representation* rather than the express taking of data itself, '[t]hus one might refer to the object classes of an object-oriented computer program as "capturing" the distinction between standing orders and particular occasions on which goods are delivered' (Agre 1994, 106). In other words, capture in this second sense is an abstraction that is able to diagrammatize and operationalize a relationship between different entities or dynamic forces. As Agre argues, this creates a common 'ambiguity between an epistemological idea (acquiring the data) and an ontological idea (modeling the reality it reflects' that pervades 'the vocabulary of computing' (Agre 1994, 106). This second, *ontological* definition is commensurate with the intentions of many cartographers, especially those who work in GIS and are necessarily constrained to working with particular data structures that demarcate between 'objects', 'classes' and 'types'.

The point to be made here is two-fold. Firstly, Sukey had difficulty capturing the emergence of police containments – as responsive as the platform was, kettles such as the one outside Scotland Yard occurred too fast for the relay of time-critical, tactical information through the platform from those in and around the area *to* the operators *back* to the crowd itself. As the containment images in chapter 9 attest to, whilst there may have been a pre-arranged intention to contain protesters in, or near the area in question, there was little possibility for this to be understood and acted upon by protesters *before* its occurrence. Only as the gestures are made by the commanding officer in frames two and three are the intentions of the mobile TSG units in charge of deploying the containment revealed – and only to those in the immediate vicinity or those with the requisite knowledge for interpreting such actions.

Secondly, that in the absence of any kind of integrated digital platform designed to anticipate the deployment of such manoeuvres, protesters resorted to more static, less 'disruptive' forms of

demonstration in an easily—controllable, well-defined and demarcated space such as Parliament Square. Thus, it represented the return of the A-to-B demonstration. Sukey is better represented, not as a linear, two-point navigation nor even as a linear, multi-point progression from 'A-to-B-to-C-to-D' (Asquith 2015, n.p.) or more conceptually as an 'A-to-Counter-Power' as some activists have suggested (Cant 2015, n.p.), but more of an open-ended 'A-to-?'. In this, the 'A' is a location with some kind of threat to the protester (rather than a nominal start point) and '?' is a mutable, shifting 'safe' or otherwise opportunistic location as interpreted by the map user themselves, in respect to location A.

In other words, the platform never instructed protesters where they should navigate to – only where they should navigate *away from* or *avoid* (location A). This is perhaps the most illuminating aspect of the Sukey platform and one that makes it distinct from other kinds of navigational services designed to offer possible and/or desirable routes *towards* a final location. This was based on the platform generating navigating knowledge of the various threats and risks during a protest – most notably in the form of police containments – that comprise a location A. By informing protesters on where they *should* go (any B, C or other lettered point) the platform assumed a normative force that otherwise was not present. In other words, the platform merely informed users of the location and type of risk present.

Another point should be made in respect to the 'data-driven' aspect of the containment tactic. The containment on Broadway, unlike many of the more infamous containments, was not used to undertake a mass data-collection of individuals. None of the protesters contained temporarily within the kettle were detained for their involvement in the otherwise unplanned direct action around Victoria. As such it is necessary to restate, this time in reference to Foucault (1991) that surveillance tactics, such as those deployed during demonstrations, do not gain their power from

actual evidence-gathering, but from the *possibility* of evidence-gathering of protester identities, movements and organization.[39]

This is another critical aspect of the containment manoeuvre. The mere *threat* to contain is enough to spur those into calculating and performing particular kinds of manoeuvres designed to combat it. Whilst this does not deny the material, embodied effects of a containment manoeuvre on individuals it still nonetheless shifts its impact temporally by throwing it forward. Thus, the kettle has force that precedes its coming-into-being. The kettle must not, therefore, be considered as if it were only a static form only ever 'on' or 'off'. Instead, it should be seen as an emergent, malleable, open-ended force with the possibility of manifesting in a plurality of ways.

Correspondence Failures

Sukey was forced into a transformation from a simple Google Maps mash-up, into a standalone web platform, and then into an OSM-based version, because of shifting navigational requirements. Here I contend that it oft-failed to 'connect the dots' necessary to aid users in navigating during protest events, and that after its death the ability was do so was even more lacking.

As activist X suggests in relation to the splinter manoeuvres that occurred in the aftermath of the A-to-B NCAFC demonstration in November 2014:

> I haven't been on a protest that was that militant…. But it felt very, particularly at BIS [Department for Business, Innovation and Skills] for example, it's a really obvious target. Like they administer universities, they negotiate things like TTIP [Transatlantic Trade and Investment Partnership] and they sort of promote capitalism in the UK essentially. That's

[39] As Foucault says, this is 'the major effect of the Panopticon: to induce in the inmate a state of conscious and permanent visibility that assures the automatic functioning of power. So to arrange things that the surveillance is permanent in its effects, even if it is discontinuous in its action…' (Foucault 1991, 201).

> their job. So, that was sort of an obvious target…I think it just spontaneously arose. I don't know, maybe some people knew it was a good target within the area but…. I know that area. I know around Westminster and stuff. I can kind of have my bearings. Which a lot of people didn't. Which was interesting. They were all going 'where the fuck are we?' [laughs] (Interview with activist X, December 2nd 2014)

Part of being able to participate in such action is knowing where one might be able to go. As the splinter around Westminster continued throughout the afternoon it was evident that – like many of these actions – there was no 'B' point at all; just a series of fluid transitory points along an undefined, collective path. Being able to navigate in such moments helps enormously and, ultimately, prevents the possibility in being contained for any length of time. Whilst activist X 'kind of' had their bearings, many others didn't.

Considering maps as 'immutable mobiles' (Latour 1986), requires a 'navigational' interpretation (November et al. 2010, 585) of their practical, situated use. The correspondence between cartographic 'signposts' involves intensive, repeated, enduring work to ensure that the connections between each can be secured successfully. The map is only useful in so much as it can be used as a navigational tool in, and of, the world itself. In other words, it gains its power and strengthens its navigational qualities only through deployment as an object for aiding in location, orientation and wayfinding. As such, it is not simply about whether the map is able to strictly *capture* navigational knowledges; but whether it is capable of ensuring the assembled elements of the cartographic project *remain aligned*. As explained:

> Even if [a marine navigator] had learned her Descartes by heart, she would never fancy for one minute that the skipper and the crew live in some 'outside world' that would resemble the geometric one she is looking at; too many features would not obviously *fit in* this geometrical world: the spray, the waves, the heat, the excitation of the treacherous

> landscape, the skills of the maneuvers [sic].' (November et al. 2010, 586, original emphasis)

And as they affirm:

> The relation she is looking for is based not on some *resemblance* between the map and the territory but on the detection of *relevant* cues allowing her team to go through a heterogeneous set of datapoints from one *signpost* to the next: some signposts are made visible from the cockpit in the hurly burly world (for instance, a roaring red buoy that the crew was desperately trying to tack), and some are visible in the no less hurly burly nauseating world of the cabin (for instance, a dark spot on the map with a red tip, which is just at the right angle expected by the navigator since the last beacon has been safely recognized and pinpointed with a blue pencil). (November et al. 2010, 585–586, original emphasis)

For first-wave student activists there were numerous occasions to become familiar with the local urban environment. Many more of the manoeuvres explored in the previous chapter were performed during demonstrations of the period. Second-wave student activists – such as those above – did not have access to a mobile platform that gave them critical navigational information. Whilst Twitter was integral to the Sukey platform's success, integrated as it was alongside a map module, used alone it is incapable of communicating the navigational dynamics of a protest event. Whilst one can keep updated with particular accounts or event-specific hashtags, there is no cartographic function in Twitter. Whilst one can post navigational updates referring to streets, junctions and specific areas relevant to those in a demonstration it cannot then visualize them on a map. Thus, it is the *integration* of these functions that allowed first-wave student activists to navigate in ways the second-wave activists were unable to, by providing contextual map updates relating to containments.

As a result of this, second-wave activists relied on the institutional knowledge disseminated by SUs. For the majority of demonstrators, then, the information given to them by their SUs (exemplified by activist X and Y's comments, in chapter 8) was accepted as official and therefore the most reliable or 'correct' advice on how to safely attend a protest event. Further to this, Sukey was a platform designed not only to remove the need for students to consult SUs as to relevant, reliable event-based information. It was also developed to short-circuit, and provide an alternative stream of navigational knowledge, to those offered by event officials and the police during demonstrations.

But Latour's concept of immutable mobility fails to consider the fluid nature of navigation. Allison Hui's (2012; 2013) 'mobile practice networks' concept, however, draws attention to the 'temporary stability' (Hui 2012, 206) of relations and the 'intermittent accomplishments' (Hui 2012, 206) forged between different, connected actors in navigational situations. Hui's unease at Latour's concept of immutable mobility is twofold. The first concerns Latour's obsession with fixity and stability. The second, with Latour's emphasis on objects being able to 'act…at a distance' (Latour 1987, 222). Both Latour (1986, 1987, 2013; Latour and Hermant 2006; November et al. 2010) and John Law (1986) use colonial navigation as an example of immutable mobility, with the paper map arguably capable of 'fixing' territory and 'acting at a distance'. Latour's argument, throughout, is that maps operate as 'inscriptions' producing an 'optical consistency' (Latour 1986, 10) between territory and map. The Sukey platform, on the contrary, was built only to establish 'intermittent' alignments between map and territory rather than any enduring fixity. Hui's mobile practice network concept provides a delicate nuance to Latour's foundational cartographic work.

Like the discussion of the Sukey survival guide in chapter 7 suggests, competing knowledges had been generated, codified and disseminated by other groups in advance of previous events. This was the primary contribution the platform had to demonstrations in the UK during this period of time. Participants in protest events were able to make use of a platform capable of synthesizing,

verifying and distributing *navigational* information in an integrated manner, incorporating both textual and cartographic content. The knowledges produced in different anticipatory layers did not do so. This also included the institutional knowledge disseminated by SUs, as well as that produced by Google Maps and OSM, as well as route information publicized by demonstration organizers such as the TUC.

Part of being able to map containments rested on the ability to anticipate police manoeuvres – most notably the containment. This attentive focus would then allow users of the platform to calculate their own manoeuvres such as splinters and rhizomes (although not necessarily occupations). As both of these concern the mapping and dissemination of contingent, navigational knowledges, they correspond to the 'active phenomena' layer of anticipation. As I detailed in chapter 8, Sukey's mutability arose through alterations and adaptations to the interface. Although there was a single design theme extending throughout the project's lifespan – a so-called 'ludic aesthetic' – and across all related media, the cartographic platform itself was transformed based on a radically changing need to 'connect the dots'. What worked on one demonstration was not necessarily true for another. This constant requirement to re-evaluate the platform defined the Sukey project at large.

Maintaining a 'correspondence' between various so-called 'datapoints' 'on' the map and 'in' the territory mattered. This is why I argue that this kind of failure was premised on an inability to 'connect the dots' as opposed to merely capturing them. As Sybille Lammes (2016, 2) has suggested, the digital map is defined by the mutability and 'animation' of the image. Whilst this mutability is often to its benefit, the contingency that arrives packed up with this mutability, ensures it is even more challenging to ensure the 'dots' are connected.

What this navigational approach does, therefore, is cause the dramatic collapse of the separation between otherwise static, mute, and unresponsive symbols on the map and unruly, unpredictable, and 'live' objects in the territory. This results in the former being enlivened to a greater degree at

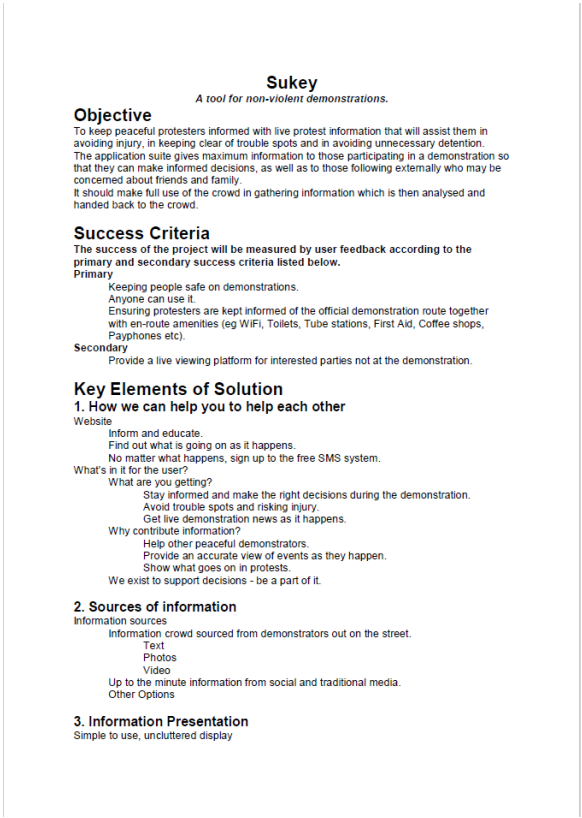
least on the par of those in the 'outside world', as well as corral, capture and *temporarily* fix phenomena in this alleged external world so as to be amenable to a navigational exercise. All that matters is that a 'signpost' – whether cartographic or phenomenal – assumes a force that requires attention *at that moment in time* to be paid to it by the navigator. Whilst it may be inferable that capture failures entail producer-side issues, and translation failures entails consumer-side problems it is not quite so neatly separated – especially so in this case as the former involves collaborative forms of data capture and the latter necessitates feedback loops between device, platform and navigator that elide any producer/consumer framing.

Further, either cartographic symbols or worldly phenomena can rise and fall in their usefulness. Whilst in categorical terms each of these kinds of things are equal, in practice they assume their position based on the strength of the allies they keep. It is this talk of 'allies' that Latour is most fond of (Latour 1987, 31). Once the navigator has passed through a necessary set of datapoints, it may be that they are never to be required by that particular map-user for that specific purpose again – only of relevance for the one 'mapping moment' (Dodge et al. 2009, 234) that emerges from the background. Sukey's efforts to adapt to these radically shifting dots or datapoints were, to a large degree, a failure.

Crypto-cartographic Failures

In January 2011, only a few months after Sukey launched, a post was published on *Spy Blog* – a website dedicated to surveillance technology and privacy concerns (Spy Blog 2011). Unlike much of the media attention at the time, it was not celebratory in tone. Instead, *Spy Blog* comprehensively detailed the various issues it had with the platform. It did so by evaluating, line by line, each part of a document put together by the Sukey developers in order to explain the key functions of the platform. Although the project website is no longer active, I had downloaded a copy at the time.

Firstly, *Spy Blog* suggested that if the platform worked as desired – as a 'tool for non-violent demonstrations' – it would also 'be easily misused by others' (Spy Blog 2011, n.p.). As the document continued, if the platform was to be successful it would be evaluated in regards to criteria that included 'keeping people safe', the provision that 'anyone can use it', and ensuring that a 'live viewing platform for interested parties' was provided. *Spy Blog*'s response was that this 'provide[d] a Communications Data [sic] and data mining opportunity for UK police and intelligence agencies, foreign intelligence agencies and corporate spies' (Spy Blog 2011, n.p.) due these open features.



Sukey

A tool for non-violent demonstrations.

Objective

To keep peaceful protesters informed with live protest information that will assist them in avoiding injury, in keeping clear of trouble spots and in avoiding unnecessary detention.
The application suite gives maximum information to those participating in a demonstration so that they can make informed decisions, as well as to those following externally who may be concerned about friends and family.
It should make full use of the crowd in gathering information which is then analysed and handed back to the crowd.

Success Criteria

The success of the project will be measured by user feedback according to the primary and secondary success criteria listed below.

Primary

- Keeping people safe on demonstrations.
- Anyone can use it.
- Ensuring protesters are kept informed of the official demonstration route together with en-route amenities (eg WiFi, Toilets, Tube stations, First Aid, Coffee shops, Payphones etc).

Secondary

- Provide a live viewing platform for interested parties not at the demonstration.

Key Elements of Solution

1. How we can help you to help each other

Website
- Inform and educate.
- Find out what is going on as it happens.
- No matter what happens, sign up to the free SMS system.

What's in it for the user?
- What are you getting?
  - Stay informed and make the right decisions during the demonstration.
  - Avoid trouble spots and risking injury.
  - Get live demonstration news as it happens.
- Why contribute information?
  - Help other peaceful demonstrators.
  - Provide an accurate view of events as they happen.
  - Show what goes on in protests.
- We exist to support decisions - be a part of it.

2. Sources of information

Information sources
- Information crowd sourced from demonstrators out on the street.
  - Text
  - Photos
  - Video
- Up to the minute information from social and traditional media.
- Other Options

3. Information Presentation

Simple to use, uncluttered display

Must have a degraded version for lower spec phones
Must show freedom of movement and support fast decisions

4. Back End Data Processing

Use of Swarming Algorithms
Use location data to detect freedom of movement
Prioritisation of Messaging and Reports to and from crowd
Coalesce multiple reports of same event
Must process footpaths and open spaces - not just roads

5. Security

User Security
- No user identifiable data to be stored. Ever.
- Regular User Security reviews throughout build
- Encrypt locations on data requests
- Encryption Keys to be generated either by users or automatically and undiscoverable by team.
- Junk all identifiable data from Apache logs

System Security
- Protected from DDOS and seizure
- Hacksafe
- Multiple routing options
- Multiple servers/server locations

Fig 10.1 | 'A tool for non-violent demonstrations'

Spy Blog continues in its analysis by further suggesting that it would '[a]llow political organizers and manipulators to feed false information to the police, etc. and to manipulate some or all of the demonstrators into creating diversions to allow either peaceful media stunts or violent attacks, unhindered by the police' (Spy Blog 2011, n.p.). Moreover, *Spy Blog* stated that it would aid 'yet

another intelligence source to help to track the demonstrations they are policing or repressing, remotely, at a safe distance' (Spy Blog 2011, n.p.).

The blogpost goes on to detail many more complaints it had with the platform; from the lack of guidance on deleting photo metadata[40] (to prevent identification), to the apparent use of swarming algorithms for modelling human movements during protest events (difficult even with state-of-the-art technologies). As a final criticism of the project, *Spy Blog* take aim at the project's declaration that 'your data is safe with Sukey' by proposing that:

> It would be much more reassuring if the Sukey.org people mentioned exactly which encryption algorithm they were using, instead of making speculative claims about its alleged strength. The fact that they have not done so gives rise to the suspicion that they have attempted to write their own encryption software, an approach which is fraught with danger for the users of Sukey.org (Spy Blog 2011, n.p.)

Similarly, that

> It would be more impressive, if the Sukey.org team with their "attention to detail" had actually demonstrated their commitment to the use of strong encryption, by running a https:// session encrypted version of the Sukey.org website. However there is currently no Digital Certificate installed. (Spy Blog 2011, n.p.)

With these damning critiques just about done with, *Spy Blog* end with a warning: 'if Sukey is not (yet) suitable for the streets of London, then it would be *positively dangerous* to deploy *it or anything similar*, in trouble spots like Tunisia or Egypt…' (Spy Blog 2011, n.p., emphasis added). In

[40] Otherwise known as 'Exif (Exchangeable image file format) data'. It can consist of a range of tags, such as: the date and time a photograph was taken at; camera settings such as model, shutter speed and focal length, copyright information; and GPS logs. Metadata removal tools exist to enable the wholesale deletion of the above.

other words, that a digital mapping designed to keep activists 'safe, mobile and informed' (Sukey 2012, n.p.) would have the opposite effect.

These are what I call 'crypto-cartographic failures'. In short, they were shortcomings, errors, issues or mistakes not emergent from a failure to capture data, or the difficulty in triangulating between cartographic 'signposts', but from the failure to protect users and collaborators engaged in the mapping process. This emphasis on the privacy of users as well as the security of the platform is one heavily supported by those partaking in 'hacker cartography' (McConchie 2015, 885).

The notion of the 'hacker' has a long genealogy, yet it is inextricably bound up with a host of issues around digital rights, access, freedom and ethics. As Gabriella Coleman (2013) explores, hacking is split along a number of legal, political and aesthetic lines that as well as incorporating and challenging ethical issues also possesses a distinct 'craft' to its operation. In a more reflexive turn, as Coleman explains, '[t]he language hackers and geeks frequently invoke to describe themselves or formulate political claims include words and expressions like *freedom*, *free speech*, *privacy*, *the individual*, and *meritocracy*' (Coleman 2011, 511; emphasis authors'). In other words, a liberalism rooted in, and advanced through, digital politics.

For Alison Powell, however, this liberal ethic divides into means and ends with two strands emergent:

> …one, a valorization of participation, both as a feature of governance and as a mode of engagement with institutional power and, two, an evocation of a transformation of knowledge production and accessibility, extending from technical to scientific knowledge' (Powell 2016, 4)

Thus whilst hacking brings forth a new kind of political action – one premised on direct engagement and extra-institutional power – it also pushes a transformation in how knowledge is

sought and discovered. It is consequently both at once about the practice of hacking and the products of hacking.

Crypto-cartography switches the focus towards the *effects* of visibility, security and privacy that are not immediately conjured up in reference to a hacker cartography. What a hacker cartography does not necessarily do is draw attention to the practices of maintaining anonymity across digital interactions. In so doing it removes all reference to creative re-use (or mis-use) of existing technologies for the purposes of 'opening' and 'exposing' people, organizations, processes and platforms. Instead, it draws attention to the proactive, preventative and intensely ethico-political decision-making that go into 'closing' and 'protecting' these interactions in the act of simultaneously championing a more open politics.

Unlike capture-related failures, crypto-failures are generated not from a failure to connect the dots, but from a failure to *protect* particular dots from being connected. One of the most powerful capabilities of new digital analytics platforms is the capacity to connect various de-individualized event-based knowledges in order to form more complete, interconnected personas. In other words, to form what Louise Amoore (2011, 27) calls an 'ontology of association'. Unwittingly, therefore, digital mapping platforms predicated on public interaction (through social media sites) fuel these correlative techniques. For developers desiring to ensure the (relative) anonymity of cartographic collaborators there are considerable hurdles to jump.

As discussed in chapter 2, police forces such as the Met routinely consider protest events as prime opportunities to collect data on individuals. They do so in order to anticipate and prevent *future* disruptions, even if attendance of such events is entirely legal and the actions undertaken by these individuals do not contravene any public order laws. As mentioned in the same chapter, the largest mass arrests ever to have been conducted in the UK have been undertaken by the Met across central and east London in the last five years. This follows the same logic as that that underpins the narrative of big data: *capture it all*. The common tactic for doing so is the deployment of a

containment. Very few of those detained during such procedures have been charged with anything other than minor public order offences or 'secondary' offences such as obstructing a police officer or resisting arrest.

GeoTime, for example, is a digital analytics platform developed by US firm Uncharted Software to enable users to visualize, map and correlate event-based data such as individual movements, cell phone calls and financial transactions. In the company's own terms, it is '[t]he industry's only 3D mapping and analysis tool, capturing time and space' and ['c]urrently used by HIDTA's [High Intensity Drug Trafficking Area] program, fusion centres, national defense [sic] organizations and law enforcement agencies worldwide for criminal investigations, intel analysis, surveillance operations and courtroom presentations' (Uncharted 2016, n.p.). In 2011, it was reported that the Met had purchased the software (Gallagher and Syal 2011a), using it to collect information on activists in order to disrupt future protests. In the time since, 'predictive policing' software such as PredPol (see; PredPol 2015, *The Economist* 2013, *Wall Street Journal* 2016) has enabled officers to predict the likelihood of future crimes being carried out in particular locations, by using similar analytical techniques. This is the rise of data-driven policing as detailed in chapter 2.

Seen in this way the Sukey platform was thus not only a service for aiding (a) the safety of protesters and (b) mediating more disruptive actions, but also for maintaining individual anonymity during such protests. That is, in avoiding being kettled, protesters also avoided the threat of being arrested and having their personal details such as home address, occupation, name, age and gender being taken down. For some who were contained this also has meant the imposition of particularly severe bail conditions that restrict attendance at, or proximity to, future demonstrations. Many of the 182 cyclists detained for participating in a critical mass event at the Olympic Park, for example:

> …were made subject to bail conditions preventing them from entering the London borough of Newham on a bicycle, or from going within 100 metres of an Olympic venue.

> In this way they were effectively prohibited from going anywhere near the Olympics even though ultimately they were not charged with any offence. (Brander 2012, n.p.)

An investigation by the *Guardian* in 2014 further revealed that 'around 85% of those barred from protesting when bailed have not been subsequently charged with any crime' with 'at least 732 people…banned by police forces in England and Wales since 2008 but then never charged' (Rawlinson 2014, n.p.). The police force responsible for the majority of these pre-charge bail conditions was the Met – with a total of 569 banned from attending demonstrations. The City of London police have also banned another 45 people since 2008, according to the Freedom of Information (FOI) request. When *Spy Blog* suggested in 2011 that the platform could prove 'positively dangerous' to those using it, they no doubt were referring to these such incidents in which activists, users and collaborators of, and with, Sukey might have their online identities exposed and their right to protest at future demonstrations severely restricted.

Despite the advantages the platform gave to protesters on-the-ground at demonstrations – whether student or anti-austerity events – in helping to keep them 'safe, mobile and informed' (Sukey 2012, n.p.) as the slogan went, there were many more disadvantages that led some to approach the platform with caution. Much of the distrust over the use of it was based around the necessarily public and visible nature of its operation. In other words, the Sukey platform was not designed to be a private, backchannel messaging service. Neither was it developed as a closed network – digital or non-digital – comprising only a small, select group of individuals all of whom had been vetted for their integrity and truthfulness beforehand. This tension – between public and private, collaborative and closed – was never fully resolved.

Carto-futures I: Paranoia and Anxiety

There were many aspects to this visibility question. The first of these involves the identity of social media users. Although it is possible to have avatars and a certain degree of anonymity on Twitter,

most people are aware that their credentials can be ascertained by anyone willing to spend a little bit of time making connections between content, metadata and details such as IP addresses. As activists are aware, police 'intelligence' often involves little more than this. Moreover, with the labour capacity, technical infrastructure and legal framework, police forces such as the Met have an even greater ability to ascertain the personal details of those involved in the communication of protest information in advance of, during, and after an event. This capacity was something that was always at the forefront of the Sukey developer's minds when creating, adapting and running the platform.

As developer X said in conversation, this ability – operational, infrastructural and judicial – is what led them to leave the UK and head to mainland Europe where data privacy laws are more stringent (interview with developer X, February 17th 2015). Doing so gave them more 'breathing space' to practice the kinds of things they enjoyed doing; programming, designing and building. In the same conversation they offer up the usual cases that have defined the atmosphere around digital technology culture in the UK that swerves from official proclamations about 'silicon roundabouts'[41] *(The Economist* 2010, n.p.) on the one hand, and enforced hard-drive destruction (Rusbridger 2013) on the other. In other words, the UK is not a safe place for those wanting to practice and hone their programming skills. One of the overarching themes of the conversation with developer X was the general geopolitical atmosphere that has pervaded since large-scale security stories had broken: particularly those of WikiLeaks (2010) and the Edward Snowden National Security Agency leaks (2013).

For self-identifying 'crypto-anarchists' such as developer X, these stories have only made it harder for programmers to continue the work they may have started in the UK that concerned any element of 'hacking' or similar. Although the Sukey project was never explicitly concerned with such, it emerged in the early part of this intensified period (late 2010), intersecting with various

[41] Now largely considered to be a failure in its own right, see; Herrmann (2015).

other activist engagements around the world such as the Occupy actions in London and New York. Developer X helped to set-up and maintain the encampment in the former of these locations, contributing to various technological projects that were undertaken during its duration from October 2011 – June 2012. Projects further afield included demonstrations in New York, and the Hurricane Hackers initiative, in response to the devastating effects of Hurricane Sandy in October 2012. These form a general timeline of projects post-Sukey that were nonetheless still undertaken whilst in the UK.

However, since then, developer X has - whilst not entirely ceasing work on software – shifted concern to infrastructural efforts of varying scale including 3D printing, an interest in independent web hosting, and a commitment to adding to the Open Source Ecology project (interview with developer X, February 17th 2015). The latter of these involves the development of 'open source industrial machines that can be made for a fraction of commercial costs, and sharing…designs online for free' in order to 'create an open source economy' and 'an efficient economy [that] increases innovation by open collaboration' (Open Source Ecology 2015, n.p.). All of these projects are driven by an interest in developing not just 'open' or alternative platforms or applications (such as Sukey) but entirely independent infrastructures and assemblages; from servers to payment systems to platforms.

Yet, even back in 2011, in conversation with another developer involved in the Sukey platform, these kinds of concerns were on the agenda. The discussion that was had then centered on the desire to roll out 'mesh networking' in order to bypass cell tower infrastructures that individual mobile phone users were reliant on to send and receive online content (Hind, 2011, 29). In 2014 – three years after that conversation – a mesh network-based communications platform called FireChat hit the news after being used by protesters during the Hong Kong protests (or, 'Umbrella Revolution'). Much like Sukey had been touted as a revolution in communication back in 2010, so Firechat was heralded as a solution to state interference in private matters. But much like Sukey,

there was no barrier to anyone signing up to the service – and that obviously included the very people the protesters were desiring to bypass. 'To the tech-savvy demonstrators in Hong Kong, FireChat…offered the potential to stay connected and organized even if the authorities shut down cellphone services' as Noam Cohen (2014, n.p.) suggested. This was a similar concern that was raised by the same developer at the height of Sukey's deployment. Yet, the necessarily 'open' nature of the platform, through which anyone can sign up and join in, means that its ability to function as a private communication channel bypassing state infrastructure is impossible.

Further, for the developers themselves, the difficulty was always the validity of the data being sent to the platform, and the verification of those submitting the data. This was the second of these concerns. The result was a thorough process through which social media users were ranked based on the truthfulness of their information. This presents an interesting case in the 'open' and 'closed' network debates. Although ostensibly a 'collaborative' platform through which any and all with a smartphone or a basic device could send the developers operational information, in truth, this required a particular hierarchical organization of users based on the veracity of the content provided. Those who had provided the developers with a number of useful, time-specific and accurate packets of information would be more likely to be trusted in the future. Those who had – mistakenly or deliberately – provided the platform with false or inaccurate information would have lesser chance of their input being recognized either through the updating of the map or the tweeting of new information.

This may seem to be an implicit critique of 'open' and 'wiki' technology projects; with OSM the most relevant example in this case. However, I contend that analysis on such has consistently failed to appreciate the way in which knowledge production and verification in such spaces have always been necessarily hierarchical. Claims to the 'democratizing' potential of these platforms have been largely misunderstood (Haklay 2013, 55). As many who have been involved in the launch, development, contribution to, or use of 'open' platforms will be aware of, the way of

which various forms of gatekeeping seek to splinter the involvement of particular peoples for a number of reasons. Key amongst them is accountability and trust. Considering that the Sukey project emerged out of a student activist background in which many were cautious of the involvement of people whose intentions were unknown, it is little wonder there were particular 'closed' arrangements in which some people had accrued (rather than notionally granted) a greater degree of trust throughout the community.[42]

To some, this might have amounted to a kind of paranoia. But for those who work on such projects, particularly where states are invariably involved, this level of paranoia is a typical and entirely necessary response to the ever-present threat of personal identities and correspondences being disclosed, projects being deliberately sabotaged, and activist communities being infiltrated. Those involved in the Sukey project and the wider student activist community became well aware of the capabilities of the Met. In the years since such caution has been vindicated with the acknowledgement that members of the Met's National Public Order Intelligence Unit (NPOIU) had infiltrated environmental activist communities, not only in order to gather intelligence on those within, but also to act as an agent provocateur by encouraging others to commit particular crimes (see; Evans 2014, Evans and Lewis 2013). The identity of undercover officer Mark Kennedy (working under the alias 'Mark Stone') was confirmed by the Nottingham Indymedia Collective on October 22nd 2010, a mere three weeks before the first of many student protests (Nottingham Indymedia Collective 2010, n.p.). As such, the discussion around police infiltration into activist groups in the UK was very much on the agenda.

Connected to this was the possibility that the Met were operating so-called 'IMSI catchers' at protest events. These devices, now available as small handheld objects, enable operators to

[42] Again, this is something that was touched upon in conversation with developer X (interview, February 17th, 2015). When the platform was deployed in 2010-2011 they were distinctly aware of the possibility that even those who were present within the so-called 'HQ' were not necessarily friendly to their efforts to provide a safe, secure service for protesters.

gather the unique identification numbers (or, international mobile subscriber identities - IMSI) of all mobile phone devices in a localized area. They do so by acting as 'fake' cell towers, and as the mobile devices 'reach out' for signal stations in the vicinity, they unknowingly connect with the IMSI catchers instead of a real cell tower. The mobile devices subsequently reveal their unique identification numbers in the process. Once the operators have a log of the devices they can trace them to users and other kinds of transactional events, via software such as Geotime.

The purchase of IMSI catchers by the Met and other UK forces, unlike the Geotime software, has never been confirmed, but developer X suggested they and others always worked under the presumption that the devices had been purchased, and were in operation during student protests when Sukey was live (interview with developer X, February 17th 2015). A recent investigation by *Sky News* adds further weight to these suspicions, after they provided 'direct evidence' of their use in central London, after enlisting the assistance of a German security company called GMSK Cryptophone (Cheshire 2015, n.p.). Similar reports in the *Guardian* (Gallagher and Syal 2011b) and *The Times* (O'Neill 2014) note the purchase and subsequent use of IMSI catchers during the preceding six years. The capacity to indiscriminately capture mobile phone data – and use it to triangulate the involvement of individuals within particular protests – was a considerable factor in developer X not only abandoning the Sukey project, but also leaving the UK indefinitely (interview with developer X, February 17th 2015).

Thus, guaranteeing the anonymity of those interacting with the platform during such demonstrations became increasingly impossible without further technical adaptations. All of these concerns suggest that the capture and surveillance models detailed by Agre (1994) are far from independent procedures. Instead, each cross-cuts the other at various points – not least when the production and circulation of geographic data, user anonymity, digital collaboration and platform privacy come into contact with each other. In other words, Sukey was unable to operationalize its obfuscatory potential in order to make user data 'more ambiguous, confusing,

harder to exploit, more difficult to act on, and therefore less valuable' to the police (Brunton and Nissenbaum 2015, 46).

Indeed, the desire to design a 'crypto-cartography' in which user anonymity, secure data encryption, map privacy and other such precepts would enable activists to safely and confidently use a platform such as Sukey, was broadly in response to what Kate Crawford (2014, n.p.) has called a 'surveillant anxiety' that has arisen with the rise of big data and attendant digital discourses. It is this fear – of a 'capture all' (Transmediale 2015, n.p.) ethic – that elevates the possible risk to those participating in disruptive cartographies. Ensuring anonymity at a technical level, therefore, becomes a pressing concern to those developing such platforms, in order to avoid both the 'digital footprints' and 'data fumes' (Thatcher 2014, 5-6) associated with platform use. The failure, then, was to provide assurances on the anonymity of cartographic contributions.

Carto-futures II: Speculative Mappings and Epistemological Evolutions

Yet an even greater integration between the 'anticipatory layers' discussed in chapter 8 was envisaged by the Sukey developers, with the desire to 'pre-map' the risk value of the built environment and 'temporary features' (i.e. the first and second anticipatory layers) in relation to containment propensity (interview with developer X, 2015). In other words, it would have entailed the mapping of the urban environment, in order to calculate and assign values to city elements, according to their utility in aiding police manoeuvres such as containments. Although not realized, this calculative desire was a speculative vision of a cartographic future. This vision was characterized by a desire to harness the capacity of both on-the-ground and distant activists in order to carry out this work in advance of any protest event.

However, developer X envisaged a way in which the conditions for their emergence and actualization could be mapped in advance of their coming-into-being. In other words, to treat

certain aspects of the manoeuvres as being shaped by, and mediated through, first or second-layer features such as the built environment, street layout, or temporary structures.

But this would have involved a form of pre-mapping in advance of the protest event in order to calculate 'blockage spaces' and bottlenecks in the urban environment (interview with developer X, 2015). As such, it would not have simply taken the shape of a general, on-the-ground mapping project (such as OSM), but a more specific mapping of phenomena for their 'blockage' and 'bottlenecking' qualities. This would have allowed the developers to assign each aspect of the built environment a particular risk score. In other words, a score assigned based on a feature's propensity to be used as part of a containment manoeuvre.

Some of the most 'successful' containments (in police operational terms) have involved the use of various built features and spatial forms in order to facilitate their operation. The containment on Westminster Bridge, in 2010, ensured that only a comparatively small number of police officers were required to 'plug' each end of the bridge. Another similarly infamous kettle occurred during the 'March for the Alternative' demonstration in March 2011 and took place immediately outside of the Fortnum & Mason department store. In this case police officers blocked all exits ensuring that activists inside could only walk straight into a waiting containment. The G20 kettle in April 2009 was facilitated with the aid of buildings and narrow streets in the City of London; once again meaning that fewer officers were required to execute it than otherwise would have been the case.

Pre-mapping bridges, narrow streets, impenetrable blocks and a variety of other features through the urban environment would have allowed users of the Sukey platform to move differently and more attentively through the city, in order to account for riskier territories. In essence, it would have allowed activists to calculate the role these inanimate features might have in police containments or other similar manoeuvres. What was arguably most innovative about this cartographic function is that it would have forced a greater integration across anticipatory layers.

Data produced in one (say, the 'built environment') would interact with data produced in another ('temporary features') in order to affect the most critical layer (movements/manoeuvres).

It would also have meant Sukey collaborators undertaking a huge cartographic job otherwise reserved for major mapping companies or initiatives such as Google Maps and OSM; working not simply on the mapping of temporary features and active phenomena, but also the built environment. Further, it would have involved a deeper form of mapping involving the assignation of risk scores to the entire urban environment. Bridges, narrow streets and those temporarily blocked for mass movement (thanks to barriers, etc.) would, following the above, be marked as 'riskier' areas prone to containment. Open areas such as parks, squares and junctions would presumably have been marked as less 'risky' areas due to the ability to exit any possible containment quickly and easily in many directions.

This speculative cartographic future was by no means inconsequential despite being unrealized. Whilst there were many aspects of the Sukey platform that were never developed, launched or integrated, this is not to say these technological 'moonshots' did not contribute to the epistemological force of the project in any way. Indeed, interviews with developers and strategists hinted that these features, if not realizable in the present, could in some way be developed and deployed in future protest events. In many ways, the near-live capture of active phenomena, comprising of a rudimentary risk calculation, and culminating in the visualization of such via a mobile, digital mapping interface itself was the most speculative of cartographic projects. Thus, desires to roll this function out beyond active phenomena to temporary features, and the wider built environment, was perhaps only an extension of an already-existing capability; rather than an entirely novel initiative.

The point to be made here is that a certain 'failure' to realize particular mapping capacities did not constitute a failure to generate or mobilize particular mapping epistemologies. Thus, a technical failure did not amount to some kind of magical erasure of heretofore accumulated

knowledge in regards to such a technological endeavour. Nevertheless, the demise of the Sukey platform, in relation to UK student activism, resulted in a marked decrease in available, and circulated, navigational knowledge such as that generated in relation to police manoeuvres.

Without such a platform, a vacuum of navigational knowledges during demonstrations has formed; with a lack of access to critical, moment-specific data having created new 'digital divides' (boyd and Crawford 2012; 673), with evident repercussions. In the second-wave of student activism in the UK, these were not replaced by identical, alternative, 'on-the-ground' information flows, but reverted back to known institutional forms governing spatial practice, such as risk assessments and 'buddy' systems. In the moments I have explored, these substitutions were poor replacements, failing to adequately provide 'live' navigational assistance to protesters. In other words, hope for a 'new spatial media knowledge politics' (Elwood and Leszczynski 2012, 13) faded.

For the reasons outlined in this conclusion I suggest that there will never be another Sukey. As I have tried to argue throughout, it was a rather unique platform operating at an extraordinary time. In navigational terms it stands alone. This thesis was not intended as a eulogy to the platform, or as a lament for a more radical – in spatial, technological or political terms – cartographic project. Instead, I have wanted to provide an account of its enduring legacy. Nearly six years on from its launch, and another three from its death, there was a navigational story still yet to be told. It is that story I hope to have provided here.

Appendix

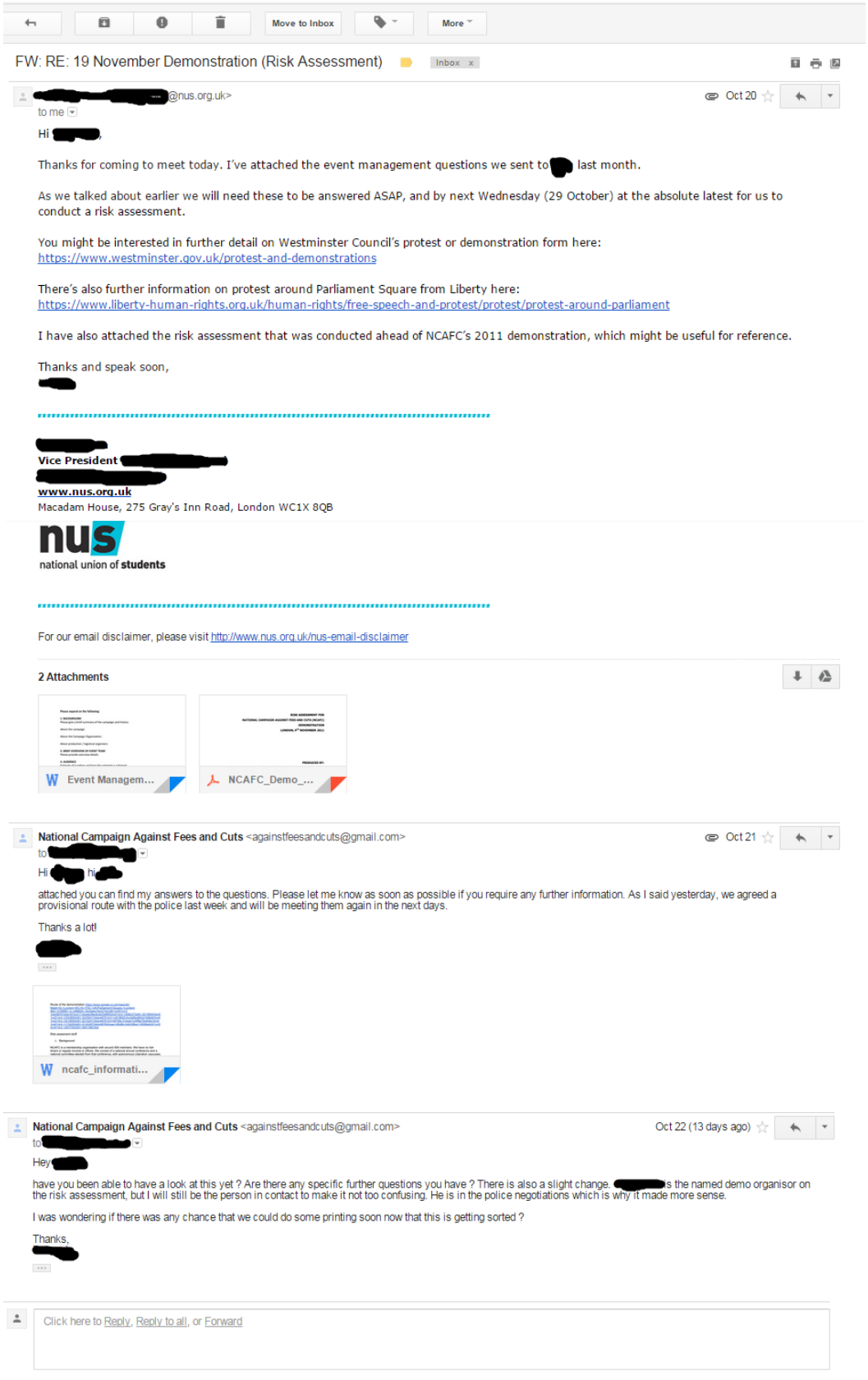
Playing with Protest website: text 1

> The expectation is that (a) participants are committed to attending **either** or **both** of the above events, (b) they are willing to record their involvement using a personal video camera or other device (smartphone, etc.), (c) desire to be interviewed on the footage at a later date, and (d) be willing for the recorded data to be used in further analysis across the course of the **Playing with Protest** research project. (original emphaisis)

Playing with Protest website: text 2

> There is *no expectation* that participants get to grips with any kind of 'protest mapping technology' they are unfamiliar with. Put simply, the project wants to see how protesters move through the city during demonstrations, and witness 'moments' during the day. Recording this movement with a personal video camera or other device is the best way of capturing the kinds of things that make a protest event! If you intend to use a paper map, Google Maps, the aid of a steward, your own intuition or the on-street Legible London system – all the better! (original emphasis)

Demonstration Correspondence 1



Move to Inbox More

FW: RE: 19 November Demonstration (Risk Assessment) Inbox x

[redacted]@nus.org.uk> Oct 20

to me

Hi [redacted],

Thanks for coming to meet today. I've attached the event management questions we sent to [redacted] last month.

As we talked about earlier we will need these to be answered ASAP, and by next Wednesday (29 October) at the absolute latest for us to conduct a risk assessment.

You might be interested in further detail on Westminster Council's protest or demonstration form here:
https://www.westminster.gov.uk/protest-and-demonstrations

There's also further information on protest around Parliament Square from Liberty here:
https://www.liberty-human-rights.org.uk/human-rights/free-speech-and-protest/protest/protest-around-parliament

I have also attached the risk assessment that was conducted ahead of NCAFC's 2011 demonstration, which might be useful for reference.

Thanks and speak soon,

[redacted]

[redacted]
Vice President [redacted]
[redacted]
www.nus.org.uk
Macadam House, 275 Gray's Inn Road, London WC1X 8QB

nus
national union of **students**

For our email disclaimer, please visit http://www.nus.org.uk/nus-email-disclaimer

2 Attachments

Event Managem... NCAFC_Demo_...

National Campaign Against Fees and Cuts <againstfeesandcuts@gmail.com> Oct 21

to [redacted]

Hi [redacted] hi [redacted]

attached you can find my answers to the questions. Please let me know as soon as possible if you require any further information. As I said yesterday, we agreed a provisional route with the police last week and will be meeting them again in the next days.

Thanks a lot!

[redacted]

ncafc_informati...

National Campaign Against Fees and Cuts <againstfeesandcuts@gmail.com> Oct 22 (13 days ago)

to [redacted]

Hey [redacted]

have you been able to have a look at this yet ? Are there any specific further questions you have ? There is also a slight change. [redacted]s the named demo organisor on the risk assessment, but I will still be the person in contact to make it not too confusing. He is in the police negotiations which is why it made more sense.

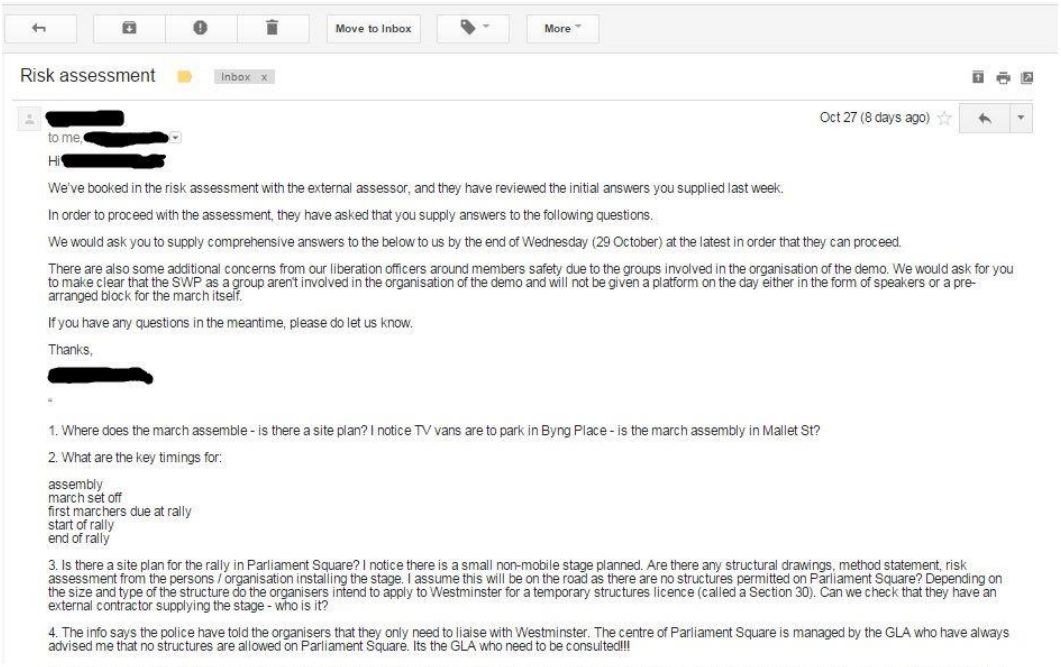
I was wondering if there was any chance that we could do some printing soon now that this is getting sorted ?

Thanks,

[redacted]

Click here to Reply, Reply to all, or Forward

Demonstration Correspondence 2



Move to Inbox More

Risk assessment Inbox x

[redacted] Oct 27 (8 days ago)

to me, [redacted]

Hi [redacted]

We've booked in the risk assessment with the external assessor, and they have reviewed the initial answers you supplied last week.

In order to proceed with the assessment, they have asked that you supply answers to the following questions.

We would ask you to supply comprehensive answers to the below to us by the end of Wednesday (29 October) at the latest in order that they can proceed.

There are also some additional concerns from our liberation officers around members safety due to the groups involved in the organisation of the demo. We would ask for you to make clear that the SWP as a group aren't involved in the organisation of the demo and will not be given a platform on the day either in the form of speakers or a pre-arranged block for the march itself.

If you have any questions in the meantime, please do let us know.

Thanks,

[redacted]

"

1. Where does the march assemble - is there a site plan? I notice TV vans are to park in Byng Place - is the march assembly in Mallet St?

2. What are the key timings for:

assembly
march set off
first marchers due at rally
start of rally
end of rally

3. Is there a site plan for the rally in Parliament Square? I notice there is a small non-mobile stage planned. Are there any structural drawings, method statement, risk assessment from the persons / organisation installing the stage. I assume this will be on the road as there are no structures permitted on Parliament Square? Depending on the size and type of the structure do the organisers intend to apply to Westminster for a temporary structures licence (called a Section 30). Can we check that they have an external contractor supplying the stage - who is it?

4. The info says the police have told the organisers that they only need to liaise with Westminster. The centre of Parliament Square is managed by the GLA who have always advised me that no structures are allowed on Parliament Square. Its the GLA who need to be consulted!!!

5. Can we check that the NCAFC will nominate a suitable site manager to oversee the set up of the stage and PA system. Can we check who will supply and operate the PA system and what control measures will be in place for sound levels?

6. The info states that the stage / speakers will be carried by hand using public transport. This doesn't sound suitable for an audience of 5000 to 10000?!!!

7. The section I'd like to include entitled 'Event Control' should really focus on how, overall, how the event is managed. I'd like an overview of how teams are managed, their structure and how communications are organised - how is the march / rally controlled by the organisation - what systems are in place.

8. Will stewards be readily identifiable - ie in hi-vis tabards - what colour if so. Will there be steward team leaders in another colour tabard?

9. Will there be a stage manager to ensure the rally runs to schedule?

10. Is there a media coordinator who will forward a logistical briefing to media in advance of the day? How will media be managed at the event?

11. Medical provision - can we have a summary of overall resources at the event? How will steward first aiders communicate or integrate with St John Ambulance? This is normally done through Event Control. Are St John Ambulance happy with this approach?

12. Lost Children - The info mentioned Qualified teachers who are CBD checked. Presumably a typo? The check used to be called CRB but it has been replaced by DBS (Disclosure and Barring Service, formerly CRB). Can the organisers confirm they mean persons that are DBS checked?
We really need to see a detailed Lost Child / Safeguarding Procedure (normally 1-2 pages).

13. The information provided for 'Disruption to the Event' is very minimal. Keeping he crowd informed at all times is not always a good idea. It would be much better to see a detailed contingency plan (ours are normally about 8-10 pages long). For the 2011 event the organisers stated that:

[redacted]

14. Waste Management - It may well be impractical for stewards and organisers will clear up after the demo - the police will want to reopen roads as quickly as possible. Also can the organisers confirm that stewards will be proactive in asking demonstrators not to drop rubbish and to deposit litter in the refuse bags offered by stewards?

15. PL insurance - The NCAFC would be naive to think they can be confident that they can take all reasonable steps to ensure that they are not responsible for incidents that would constitute a liability for NCAFC. As they say the lack of PL insurance does make them vulnerable from a liability perspective.

16. Under Key contacts - can the organisers add roles with the organisation or for the event and are there contact details for [redacted]?

"

Sent from my iPad
For our email disclaimer, please visit http://www.nus.org.uk/nus-email-disclaimer

National Campaign Against Fees and Cuts <againstfeesandcuts@gmail.com> Oct 27 (8 days ago)

to [redacted]

Hey [redacted]

Thanks for getting back.
I am just ccing [redacted] in as he has got the most expertise on this.

[redacted]

[redacted] Oct 27 (8 days ago)

to me, [redacted]

Hey all,

Hope you're well. I'm on my last full day of freedom (starting a job tomorrow) but will be about as a demo consultant. I'll feed in logistically via [redacted] on the questions above, and we can probably sort something satisfactory out.

In general though, I think it's important to remember the kind of organisation involved here: NCAFC has no staff, no offices and no money. Telling people who are already at their wits' end running around the country, scraping around for money, talking to everyone (press, contacts, organisations) with no backup or institutional support that they should be producing an 8-10 page contingency plan for event disruption, is not really helpful. From having done it a few years ago and observed/participated in the current effort, what is happening is that 2-3 people are attempting to perform an equivalent function to the whole of NUS's mobilising operation, and not being paid for it - that is worth bearing in mind.

Equally, the reason why we'd use a stage which "isn't suitable" is because we can't afford one. There are some expectations that are just going to have to be managed: for instance there is no way that we can take out PL insurance. We tried in 2011, but were told that we were literally uninsurable, or that it would cost tens of thousands. That's a bit of a dead end if your organisational income is under £3k p.a. In writing the risk assessment we used exactly the same wording as we used in 2011 on PL...

Some other things: we've never been asked to produce a lost child policy before, or a site plan, or an event plan, or a separate contingency plan. The notes passed on by the risk assessor seem to assume that we might pass these on to our Events or Campaigns staff whose job it is to understand these terms and fill in forms. In fact, it just means we'll all be up til 3am wondering what on earth to do.

While I really don't mean to imply that anyone is being obstructive, the level of work and bureaucracy involved in getting support out of NUS sometimes seems like it outstrips the benefits.

Is there any idea of when we might get funds once this is all done?

National Campaign Against Fees and Cuts <againstfeesandcuts@gmail.com> Oct 29 (6 days ago)

to [redacted]

Hello,

please find attached the updates risk assessment and answers to the above questions. Just to confirm that the SWP are not involved in the organisation of the demonstration and they will not be given a platform as speakers at the rally or in the form of a pre-arranged block.

If you have any further questions, please get in touch.

Thanks,

[redacted]

Risk assessment

1. Where does the march assemble - is there a site plan? I notice TV vans are to park in Byng Place - is the march assembly in Mallet St

[redacted]

2. What are the key timings for:

assembly: [redacted]
march set off: [redacted]
first marchers due at rally: [redacted]
start of rally: [redacted]
end of rally: [redacted]

3. Is there a site plan for the rally in Parliament Square? I notice there is a small non-mobile stage planned. Are there any structural drawings, method statement, risk assessment from the persons / organisation installing the stage. I assume this will be on the road as there are no structures permitted on Parliament Square? Depending on the size and type of the structure do the organisers intend to apply to Westminster for a temporary structures licence (called a Section 30). Can we check that they have an external contractor supplying the stage - who is it?

[redacted]

4. The info says the police have told the organisers that they only need to liaise with Westminster. The centre of Parliament Square is managed by the GLA who have always advised me that no structures are allowed on Parliament Square. Its the GLA who need to be consulted!!!

[redacted]

5. Can we check that the NCAFC will nominate a suitable site manager to oversee the set up of the stage and PA system. Can we check who will supply and operate the PA system and what control measures will be in place for sound levels?

[redacted]

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[redacted]

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[redacted]

[redacted]

8. Will stewards be readily identifiable - ie in hi-vis tabards - what colour if so. Will there be steward team leaders in another colour tabard
[redacted]

9. Will there be a stage manager to ensure the rally runs to schedule?
[redacted]

10. Is there a media coordinator who will forward a logistical briefing to media in advance of the day? How will media be managed at the event?
[redacted]

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[redacted]

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[redacted]

14. Waste Management - It may well be impractical for stewards and organisers will clear up after the demo - the police will want to reopen roads as quickly as possible. Also can the organisers confirm that stewards will be proactive in asking demonstrators not to drop rubbish and to deposit litter in the refuse bags offered by stewards?
[redacted]

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16. Under Key contacts - can the organisers add roles with the organisation or for the event and are there contact details for Fiona Edwards?
[redacted]

Lost Child Policy
[redacted]

In the case of a child being found without parents
[redacted]

In the case of parents/guardians reporting
[redacted]

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